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MONTANA TUNNELS PROJECT
HARD ROCK IMPACT MITIGATION PLAN
FOR
JEFFERSON COUNTY, MONTANA

Prepared By:

Mountain International, Inc.
P.O. Box 1038
Helena, Montana

JULY 1985

REVISED NOVEMBER 15, 1985

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MONTANA TUNNELS PROJECT
HARD ROCK MINE IMPACT MITIGATION PLAN
FOP
JEFFERSON COUNTY, MONTANA

Submitted To:

Jefferson County
Town of Boulder
Clancy Elementary School District #1
Boulder Elementary School District #7
Montana City Elementary School District #27
Jefferson High School District #1
Montana City Rural Volunteer Fire Department
Boulder Valley Rural Volunteer Fire Department
Jefferson County Refuse Disposal District

Submitted By:

Centennial Minerals Inc.
Fourth Floor -- Power Block
Helena, Montana

JULY 1985

REVISED NOVEMBER 15, 1985

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INTRODUCTION

PREFACE TO THE MONTANA TUNNELS PROJECT
HARD ROCK IMPACT MITIGATION PLAN

This document is the Socioeconomic Impact Mitigation Plan prepared under provisions of Montana Hard Rock Mining Impact Assistance Act of 1981 (Section 90-6-301 et seq. MCA) for the Montana Tunnels Project as proposed by Centennial Minerals Inc. The volume describes the Montana Tunnels Project, its implications for population change in Jefferson County, Montana, and its consequences for the provision and financing of services provided by units of local government.

The plan is divided into four major sections. The first section is a summary of the Plan outlining the developer's proposal and commitment to mitigate any adverse financial impact to local units of government arising from the Montana Tunnels Project. Section two describes the Montana Tunnels Project, its setting, and relationship to the Montana Hard Rock Impact Assistance Act. The third section outlines the assumptions used to develop impact projections for the units of local government described in the plan. It also contains a description of the trends and characteristics of Jefferson County's population including expected changes in the future with and without the development of the Montana Tunnels Project. The final section of the report describes the existing condition of services provided in

Jefferson County and how the services will be affected by the development of a mine/mill complex near Jefferson City. Section four also contains a series of alternative actions that can be taken to mitigate adverse impact and the specific steps Centennial Minerals proposes to implement. The projected financial costs of impact mitigation that Centennial Minerals proposes to assume also are contained in the chapter. The final portion of section four is entitled "Amendments to the Plan." This section has been designated as a place to insert amendments or changes in the plan that may be mutually agreed upon by Centennial Minerals and affected local governments.

A portion of the information presented in this document was abstracted from the report Montana Tunnels Project Socioeconomic Impact Assessment, Volume I: Existing Socioeconomic Environment in Jefferson and Lewis and Clark Counties, Montana submitted to the Montana Department of State Lands as part of Centennial's application for a hard rock mine operating permit. The reader is encouraged to consult that volume for additional information.

Contact Persons

Individuals with comments or questions about the plan should direct their inquiry to either:

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SECTION ONE

SUMMARY OF THE PLAN AND
DEVELOPER'S COMMITMENT TO MITIGATE
ECONOMIC IMPACT TO LOCAL UNITS OF
GOVERNMENT CAUSED BY THE MONTANA TUNNELS PROJECT

SUMMARY AND DEVELOPER'S COMMITMENT

This section is an update of the summary contained in the original Montana Tunnels Project Hard Rock Mine Impact Mitigation Plan for Jefferson County, Montana submitted for review pursuant to the provisions of 90-6-301 et seq. MCA, on July 8, 1985. This update incorporates all amendments to the Impact Plan negotiated between Centennial Minerals, affected local jurisdictions of Jefferson County, and as reviewed and approved by the Montana Hard Rock Mining Impact Board on October 24, 1985.

Compiled November 15, 1985

Section 90-6-307(1) and (2), MCA, specifies that an "impact plan shall include:"

- (1):
 - (a) a timetable for development, including the opening date of the development and estimated closing date;
 - (b) the estimated number of persons coming into the impacted area as a result of the development;
 - (c) the increased capital and operating cost to local government units for providing services, including but not limited to police and fire protection, sewage, water treatment, schools, road construction and upkeep, education, and medical care, which can be expected as a result of the development;
 - (d) the financial or other assistance the developer will give to local government units to meet the increased need for services.

(2):
In the impact plan, the developer shall commit itself to pay all of the increased capital and net operating cost to local government units that will be a result of the development, either from tax prepayments, as provided in 90-6-309, special industrial

educational impact bonds, as provided in 90-6-310, or other funds obtained from the developer, and shall provide a time schedule within which it will do so.

Pursuant to the statutory requirements listed above, Centennial Minerals, Inc. submits the following information.

Proposed Timetable of Development

The timetable for the development of the Montana Tunnels Project as this document is prepared is as follows:

December 14, 1984	Submission of Operating Permit Application to the Montana Department of State Lands
February 1986	Earliest expected date a mine permit would be issued
March 1986	Earliest expected date to start construction of mine and processing facilities
March 1986-June 1987	Construction of mine and processing facilities
June 1987	Earliest expected date to commence mineral production
July 1987	Earliest expected date to commence full-scale commercial production
June 1987-May 1990	Initial operating level; employment of 232 workers
May 1990	Earliest expected date to revise scale of mine operations plan; Project to increase employment to 340 workers
May 1997	Earliest expected start of production phase down
May 1997	Earliest expected date of production curtailment

May 1997-April 1998

Expected period of mine site
demolition, salvage and reclamation

July 1998

Project closed

The above time schedule is approximate and does not reflect potential delays in the permitting process. Subsequent sections of this document contain projections that are, in part, contingent upon the timing of the Montana Tunnels project. A short delay of 12 months or less will not materially affect the substance of this document. The population and fiscal impact projections will need to be pushed back in time and, if necessary, adjusted from annual to partial year projections. Projected governmental revenues and expenditures are not likely to change much more than five percent during a year's period of time given current inflation rates. Once adjusted for the actual timing of Montana Tunnels, the fiscal impact projections will closely approximate expected governmental costs and benefits notwithstanding the project's delay. A longer term delay (i.e., over 12 months or two fiscal years) will likely necessitate the recalculation of at least some of the material herein.

As currently proposed, the Montana Tunnels Project has a projected life of 12 1/3 years which includes approximately 15 months of construction, 10 years of commercial production, and a 12-month period to dismantle and reclaim the mine/mill site. The 10-year production estimate is considered a minimum mine life using existing technology, current metal prices, and known ore reserves. Delineation of additional ore reserves,

technological or price changes in the future may well extend the mine's life beyond the 10 years identified here.

Estimated Number of Persons Coming Into the Impacted Area

The maximum amount of in-migration projected to occur in Jefferson County as a result of the Montana Tunnels Project is shown on Table 1-1. The maximum number of persons expected during the construction period ranges between 46 and 183 persons in the first and fourth quarters of construction, respectively. During the initial three years of mineral production, maximum in-migration is forecast at 44 persons. During production years four through ten, expected maximum in-migration is estimated at 65 persons. Table 1-1 also shows the allocation of in-migrant population by local jurisdiction.

The projected population change for Jefferson County is low, for two reasons. First, Centennial Minerals is committed to hiring as much of its labor force as possible from the local area, the region bounded by Butte on the south and the Helena Valley to the north. There is a large supply of skilled manpower available locally who are both capable and, judging from the number of Centennial Minerals' job applicants, ready to work at Montana Tunnels. Centennial Minerals expects to hire and relocate (i.e., induce in-migration) no more than 20 percent of its total workforce. Second, Lewis and Clark County is expected to receive the largest share of immigration associated with the Montana Tunnels Project. Southern Lewis and Clark County has a large supply of available housing and an array of social, cultural, commercial, and

TABLE 1-1

TOTAL PROJECTED POPULATION INCREASE CAUSED BY MONTANA TUNNELS PROJECT
BY LOCAL GOVERNMENT JURISDICTION IN JEFFERSON COUNTY, MONTANA: WORST CASE

	Construction Period					Operations Year 1-3	Operations Year 4 Plus
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	5th Qtr		
Jefferson County	46	48	84	188	72	44	65
Clancy Elem. Dist. #1	23	23	41	94	35	27	38
Boulder Elem. Dist. #7	23	25	43	94	37	4	7
Mt. City Elem. Dist. #27	0	0	0	0	0	13	20
Jefferson High School Dist. #1	46	48	84	188	72	44	65
Town of Boulder	23	25	43	94	37	4	7
Jefferson County Solid Waste District	46	48	84	188	72	44	65
Montana City Rural Fire District	0	0	0	0	0	13	20
Boulder Valley Fire District	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Source: Mountain International, Inc.

governmental services superior to those provided in Jefferson County. Lewis and Clark County is only 25 to 30 minutes from the mine site by automobile. As such, it is expected that most immigrant workers will locate in or near Helena and commute to work.

Table 1-2 identifies the maximum expected population increase in Jefferson and Lewis and Clark counties. The table is organized by elementary school district, the only set of local jurisdictions whose boundaries include all of the territory contained in the municipal and unincorporated areas of Helena Valley. The maximum immigrant population anticipated in both Jefferson and Lewis and Clark counties during the construction period is between 142 and 430 persons; during mine operations it will range between 177 and 261 people. See Figure 4-2 in section four for a map of the Jefferson County school districts.

Increased Capital and Operating Costs to Local Government

Table 1-3 identifies the increased costs for capital and operating expenses that likely will be incurred by each affected unit of local government. The methods used to calculate such costs are generally described under the topic heading for each individual service (e.g., fire protection) contained in the plan. Cost estimation has been limited to the mine's construction period and two years of commercial production or until the mine has been fully assessed and placed on the tax rolls of Jefferson County. Thereafter, the mine's property tax payments will offset any increases in expenses caused by the mine, its in-migrating employees, and their families.

TABLE 1-2
TOTAL PROJECTED IN-MIGRATING CONSTRUCTION AND MINE
OPERATIONS POPULATION BY COUNTY AND SCHOOL DISTRICT

	Construction Period					Operations Year 1-3	Operations Year 4 Plus
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	5th Qtr		
<u>Jefferson County</u>							
Clancy Elem. Dist. #1	23	23	41	94	35	27	33
Boulder Elem. Dist. #7	23	25	43	94	37	4	7
Mt. City Elem. Dist. #27	0	0	0	0	0	13	20
Subtotal	46	48	84	188	72	44	65
<u>Lewis and Clark County</u>							
Helena Elem. Dist. #1	57	59	80	142	70	79	117
Kessler Elem. Dist. #2	5	5	8	12	8	6	9
Warren/Darcy Elem. Dist. #3 ¹	10	10	12	23	12	12	18
East Helena Elem. Dist. #9	24	24	36	65	31	35	51
Subtotal	96	98	136	242	121	133	196
Total Both Counties	142	146	220	430	193	177	261

¹Warren/Darcy Elementary School District #3 was officially annexed to Helena School District #1 on April 9, 1985. The population projections for the two districts are to be combined.

Source: Mountain International, Inc.

TABLE 1-3
IMPACT ASSISTANCE TO OFFSET INCREASED CAPITAL
AND OPERATING COSTS BY LOCAL JURISDICTION IN JEFFERSON COUNTY¹

<u>Jurisdiction</u>	<u>Service</u>	<u>Capital Cost</u>	<u>Operating Cost</u>	<u>Type of Payment</u>	<u>Payment Schedule</u>	<u>Tax Credit</u>
Jefferson County	County road construction	\$231,000	NA	\$50,000 Tax prepayment	Within 30 days of mine construction	Yes: 1st or 4th year of commer- cial operation
	County road maintenance	NA	\$15,000	Tax prepayment	Quarterly	Yes: Annual
	Law enforcement communications	\$18,000	0	Donation	Within 30 days of mine construction	No
	Fire protection for mine related households	\$250	None	Donation	Within 30 days of mine construction: one time only	No
Jefferson County Solid Waste District	Solid waste collection and disposal	None	None	None	Not applicable	No
	Water supply	None	None	None	Not applicable	No
	Wastewater treatment	None	None	None	Not applicable	No
	Ambulance service	\$5,000	NA	Donation	Within 30 days of mine construction: one time only	No
Town of Boulder	Ambulance service	NA	\$1,000	Donation	Annual donation for operations	No
	Fire protection for mine related households	\$250	None	Donation	Within 30 days of mine construction: one time only	No
	Emergency medical service	\$2,500	NA	Donation	Within 30 days of mine construction: one time only	No
	Emergency medical service	NA	\$250	Donation	Annual donation for operations	No
Clancy Quick Response Unit						

TABLE 1-3
IMPACT ASSISTANCE TO OFFSET INCREASED CAPITAL
AND OPERATING COSTS BY LOCAL JURISDICTION IN JEFFERSON COUNTY¹
(CONTINUED)

<u>Jurisdiction</u>	<u>Service</u>	<u>Capital Cost</u>	<u>Operating Cost</u>	<u>Type of Payment</u>	<u>Payment Schedule</u>	<u>Tax Credit</u>
Jefferson City Fire Department	Fire department garage	\$15,000	NA	Donation	Within 30 days of mine construction; one time only	No
	Fire protection backup assistance	NA	\$1,000	Donation	Annual donation for operations	No
Montana City Fire District	Fire protection for mine related households	\$250	None	Donation	Within 30 days of mine construction; one time only	No
Clancy Fire Department	Fire protection for mine related households	\$250	None	Donation	Within 30 days of mine construction; one time only	No
Boulder Valley Fire District	Fire protection for mine related households	\$250	None	Donation	Within 30 days of mine construction; one time only	No
Montana City Elementary School District #27	School capital and operating expenses	By Formula		Tax prepayment: if applicable	Within 30 days of student enrollment	Yes: if applicable
Clancy Elementary School District #1	School capital and operating expenses	By Formula		Tax prepayment	Within 30 days of student enrollment	Yes
Boulder Elementary School District #7	School capital and operating expenses	By Formula		Tax prepayment: if applicable	Within 30 days of student enrollment	Yes: if applicable

TABLE 1-3
IMPACT ASSISTANCE TO OFFSET INCREASED CAPITAL
AND OPERATING COSTS BY LOCAL JURISDICTION IN JEFFERSON COUNTY¹
(CONTINUED)

<u>Jurisdiction</u>	<u>Service</u>	<u>Capital Cost</u>	<u>Operating Cost</u>	<u>Type of Payment</u>	<u>Payment Schedule</u>	<u>Tax Credit</u>
Jefferson High School District #1	School capital and operating expenses	By Formula		Tax prepayment	Within 30 days of student enrollment	Yes
Non-governmental	Housing	NA	NA	None	Not applicable	NA
Non-governmental	Employee transportation	NA	NA	None	Not applicable	NA
TOTAL	All services	\$272,750 (plus formula based payments to school districts)	\$17,250	Donations & tax prepayments	As indicated above	As indicated above

¹ Costs updated November 15, 1985.

Source: Mountain International, Inc.

Several of the local jurisdictions are expected to receive little to no increase in costs as a result of the Montana Tunnels Project. Unless a cost increase is specified in the plan, the project "increased capital and operating costs" to that unit of government is "nothing."

Financial or Other Assistance the
Developer Will Give to Local Governments

Payments made by Centennial Minerals to mitigate economic impacts to units of local government under the provision of the Hard Rock Impact Assistance Act will be tax prepayments unless otherwise specified in the plan. All tax prepayments will be credited against the company's tax liability in the first fiscal year following completion of the impact period as defined in the plan. Annual tax credits are limited to \$10,000 or 15 percent of the total amount of prepayment whichever is greater. Non-governmental entities in Jefferson County whose service capacity has been adversely impacted as a result of the Montana Tunnels Project and who provide assistance to either Centennial Minerals or its employees, will receive financial or equipment donations to mitigate anticipated problems.

Table 1-3 also identifies the amount and type of impact assistance payments the developer proposes to make. In addition, the company will establish a \$10,000 Impact Assistance Contingency Fund under the control and supervision of the Jefferson County Commission to provide assistance for "minor" impact problems not envisioned when the Impact Plan was prepared. Other major, principally non-monetary commitments of impact assistance are listed below by service area.

Local Streets and Roads: Centennial Minerals will up-grade the existing county road between the Jefferson City interchange and the Centennial Ranch property as follows:

1. Traffic through Jefferson City will be routed on two streets -- one way in and one way out. Both roads will use existing county right-of-way.
2. The access streets through Jefferson City will be repaved up past the Community Hall.
3. The Corbin-Wickes Road will be widened, new culverts installed, drainage improved as necessary, and the entire surface graveled.
4. A by-pass will be built around Corbin south of the existing road, eliminating mine traffic in the community.
5. A new section of road will be constructed across the Centennial Ranch and up the east and south sides of Alta Mountain to the project site. There, it will merge with an existing road that drops into the Clancy Creek drainage.
6. The existing county road north of Wickes across Chute Creek will be closed, and traffic directed over the new roadway.
7. Centennial Minerals will maintain the access road across its property. Jefferson County will continue to maintain the existing Jefferson City-Corbin-Wickes county road.
8. The county shall retain title to the reconstructed portions of the roads and will be granted title to any new sections built to replace the Wickes-Chute Creek section when the project is closed.

Law Enforcement:

1. Augment the Jefferson County Sheriff's reserve by committing the company security staff as special duty deputies for use by the Sheriff's Department on an as needed basis. This step presupposes that such staff only would be used for functions such as search and rescue or general peacekeeping during special events (e.g., rodeos) when the department needs additional manpower on a limited basis.

Solid Waste Management:

1. Centennial Minerals will establish a private landfill on its property for the company's exclusive use pursuant to the statutes and regulations of the State of Montana for the disposal of Class 2 and Class 3 wastes.
2. Centennial Minerals will sell recyclable material, waste oil, and used lubricants to local recycling firms whenever feasible.
3. Centennial Minerals will negotiate a standby agreement with the Solid Waste District to use their services in the event waste disposal is not practical at the mine site. The company will reimburse the district for any services the district may provide the company.
4. Centennial Minerals will monitor the residential locations of the mine and construction workforces and periodically contact the Solid Waste District to insure that the project is not causing either a waste collection or disposal problem.
5. Centennial Minerals agrees to make a payment of \$570.00 for miscellaneous solid waste management expenses through the impact assistance contingency fund by application from the District at any time during the impact period. The District may request additional payments from the fund as necessary and/or seek amendments to the Plan as provided in 90-6-301 et seq., MCA.

Medical Services: Centennial Minerals plans to provide emergency medical services at the project site with its own staff of certified EMT's. It will maintain a first aid station and ambulance as well. The first aid station/safety office will be manned around the clock, seven days per week. Centennial Minerals proposes to negotiate mutual aid agreements or contracts with the Town of Boulder and Clancy Quick Response units to use their emergency response vehicles and EMT volunteers as a source of backup support for the mine including, but not necessarily limited to, the following major concepts:

1. The Boulder Ambulance will be available to respond to emergency calls at the mine/mill site at the company's request. The company will reimburse the Boulder Ambulance for the cost of service.
2. Centennial Minerals' ambulance will be available to support the Boulder Ambulance, if needed, for major accidents or cases requiring several vehicles for transport that occur in the Corbin, Wickes, Jefferson City, and Boulder areas. The company will have only one emergency vehicle and prefers not to send it too far from base in case it is needed at the mine.
3. Centennial Minerals' EMT staff will be available to assist the Boulder Ambulance and/or Clancy Quick Response Unit in a support capacity for major accidents, etc., occurring within 15 or so miles of the mine. Again, the company must have trained EMT's onsite at all times when the plant is running.
4. The Boulder Ambulance will take the lead in organizing and providing training for emergency medical services. The company's EMT staff will jointly train with the Boulder/Clancy volunteer groups.
5. Centennial Minerals will provide the Boulder Ambulance and Clancy Quick Response Unit with a list of equipment available at the mine that can be "loaned out" for use in medical emergencies such as winches, hydraulic jacks, etc. At this time, the company does not anticipate owning heavy duty extraction equipment (i.e., Jaws-of-Life) but, whatever similar equipment is available will be shared with the surrounding community as needed.

Fire Protection: Centennial Minerals will provide onsite fire protection for its property and proposes to use the Jefferson City Fire Department on a backup basis. To that end, the company proposes to negotiate a contract or memorandum of understanding with the Jefferson City department incorporating, among other things, the following major points:

1. The Jefferson City Fire Department will respond to fire calls made by Centennial Minerals at the mine site.

2. Centennial Minerals' fire suppression unit and the Jefferson City department will train together whenever practical.
3. Centennial Minerals will supervise the combined force of both departments on structure and equipment fires within the mine/mill complex.
4. The Jefferson City Fire Department will be linked with the mine site by radio communication through its dispatch function or officers.

With respect to the Clancy, Montana City, Boulder, Boulder Valley, and Jefferson County rural fire departments, Centennial Minerals proposes:

1. To provide each with a list of equipment the company will make available for use in fighting structure or wildland fires on an as needed basis. Generally, the equipment identified for use in the "fire protection pool" will be things such as water trucks, bulldozers, hand tools, and so forth. This equipment will be available to Jefferson City as well.
2. Centennial Minerals will make a \$250, one-time, donation to each fire department (i.e., Montana City, Clancy, Boulder Valley, and the Town of Boulder) at the start of the construction period to help offset any miscellaneous expenses the departments might incur from mine related households located in their area.

All affected fire departments will be eligible for the following:

1. As a matter of company policy, members of all departments will be invited to participate in all emergency response training conducted by Centennial Minerals.
2. All departments are eligible for additional impact assistance, if need be, through the Impact Assistance Contingency Fund administered by the Jefferson County Commission.
3. Centennial Minerals agrees to reimburse all departments for reasonable costs incurred by the department responding to fire calls at the Montana Tunnels property.
4. Centennial Minerals will establish a fire protection advisory committee consisting of one representative from each of the five fire departments included in the plan to advise the company on fire protection activities in Jefferson County, including equipment needs for the proposed "fire protection equipment pool" as identified in the plan.

Education: Centennial Minerals' impact assistance commitments apply to Jefferson High School District #1; Clancy Elementary School District #1, Boulder Elementary School District #7, and the Montana City Elementary School District #27.

1. For the duration of the impact period, Centennial Minerals will pay each school district an amount equal to the sum of the foundation and permissive payments per ANB based upon the school foundation schedules in effect at the time of student registration for each student space occupied by an in-migrant mine employee student. For children enrolled in school after the school year has started, such payments will be prorated for the remainder of the school year. In calculating Centennial Minerals' payment obligation during the second and subsequent school years, the company shall reimburse the school districts for the net addition in student spaces occupied by in-migrant mine employee students over the preceding year. The school district will notify and request payment for the in-migrant mine employee enrollees in writing to Centennial Minerals. The company will provide payment within 30 days of notification.
2. For the duration of the impact period, should any school district enroll an in-migrant mine employee student who is handicapped and/or developmentally disabled and who requires a special educational curriculum, Centennial Minerals will pay the district for the cost of the child's education, less payments made to the district for such purposes from state and federal agencies. The school district shall notify and request payment for such enrollees in writing to Centennial Minerals. The request for payment shall be accompanied by documentation attesting to the child's disability and a copy of the educational treatment plan. Centennial Minerals will provide payment within 30 days of notification.
3. It is Centennial Minerals' company policy to be actively involved in and support community activities. Montana Tunnels will support charitable activities and community affairs in the local area. Periodically, the community and schools will receive special donations of equipment, materials, and supplies from the company. In the past, the company has donated manpower and equipment for special projects conducted either by the schools, non-sectarian/non-partisan civic groups, and units of local government. That policy will be in effect at Montana Tunnels as well. The project manager will oversee the company's participation in and support of community affairs.

4. During the impact period, if the addition of one or more in-migrant mine employee student(s) to a classroom increases the classroom enrollment so that the school board decides to split the class, Centennial Minerals will pay its prorated share of hiring an instructional aide or a new teacher for the new class. Proration will be based on the number of in-migrant mine employee students enrolled in the affected grade compared with the total number of students in that grade.
5. During the impact period, Centennial Minerals agrees to bear its prorated share of any construction costs for new school structures within the Montana City, Boulder, and Clancy elementary school districts. The prorated share is the proportion of in-migrant mine employee students to total school enrollment during the then current, or most recently completed school year. The monitoring committee as constituted in the plan may make recommendations to Centennial Minerals concerning the prorated share of such costs.

As used in this section, "school structures" means classrooms, libraries, laboratories, teacher work areas, administrative offices, and related support facilities. Excluded are gymnasiums, athletic fields, and movable equipment.

For the district(s) ultimately not sharing in the project-generated tax revenues, Centennial Minerals may make payments for school facilities either in the form of a grant to the school district or by using educational impact bonds as outlined in 90-6-310, MCA.

6. During the impact period, if, in the judgement of a school board, school overcrowding is projected to occur prior to the time new school structures can be constructed, Centennial Minerals agrees to pay a prorated share of the cost of any temporary facilities. The company's prorated share is the proportion of in-migrant mine employee students to total school enrollment in the affected grades using the temporary facilities.
7. Tax credits to offset tax prepayments will be levied only against tax revenues derived from the taxable value of the Montana Tunnels' property. When such tax credits are available, the total amount will be limited annually to a maximum of \$10,000 or 15 percent of the tax prepayment, whichever is greater, until all prepayments are recovered. Tax credits will be available to Centennial Minerals commencing with the second fiscal year of commercial mining operations.

8. The monitoring committee is an appropriate body to discuss mine-related, educational items of mutual interest to the school districts. Subject matter may include but is not necessarily limited to the provision of tax base sharing among the school districts.
9. This plan or any portion thereof which applies to a single school district may be modified at any time by and with the mutual consent of Centennial Minerals and the affected school district. However, changes which impact other school districts may only be made with the concurrence of all affected districts and the Jefferson County Commissioners.

Developers Commitment to Pay All
Increased Capital and Net Operating Costs

Centennial Minerals, Inc. warrants that it will pay all increased capital and net operating costs incurred by units of local government within Jefferson County, Montana, as a direct result of the Montana Tunnels Project and as specified in the Hard Rock Mine Impact Mitigation Plan.

Original Notarized Signature by:
Alan Richardson
Vice President for Operations
Centennial Minerals, Inc.
July 3, 1985

Re-signed and notarized by:

Centennial Minerals, Inc.

John S. Lyster Manager for Administration 11/15/85
Name Title Date

Subscribed and sworn to before me this 15th day of November

Martha L. Hession
NOTARY PUBLIC for the State of Montana
Residing at Helena, Montana

(S E A L)

My commission expires August 9, 1988

SECTION TWO

THE MONTANA TUNNELS PROJECT, ITS SETTING,
AND RELATIONSHIP TO THE MONTANA HARD ROCK
MINE IMPACT MITIGATION ACT

THE MONTANA TUNNELS PROJECT

In May 1984, Centennial Minerals Ltd. submitted a conceptual mining plan to the Montana Department of State Lands broadly describing the company's intention to develop an open pit gold, silver, lead, and zinc mine near the community of Jefferson City, Montana. A brief summary of the plan follows:

Centennial Minerals Limited in partnership with the U.S. Minerals Exploration Company of Denver, Colorado, plans to develop a gold, silver, lead and zinc open pit mine and ore processing operation at the Montana Tunnels property in Jefferson County, Montana. The Montana Tunnels property is located approximately 15 air miles south southwest of Helena, Montana, and 10 air miles due north of Boulder, Montana. The project area includes parts of Sections 8, 9, 16, and 17, in Township 7 North, Range 4 West in Jefferson County. Centennial Minerals Inc., a wholly owned subsidiary of Centennial Minerals Limited, will be the operator of the mine and ore processing facility.

Gold was discovered near the Montana Tunnels property in 1864. Since then, the entire area has been subject to mineral exploration and development. Land assembled for the Montana Tunnels property incorporates or is located nearby a number of old mines and developed mineral showings. The general area includes the Alta, a large underground silver mine and an associated open pit, most recently worked

during the 1950's; the Gregory, worked from 1867 to 1884; and the Mina, Washington, and Bertha mines, in addition to many smaller old workings. The Montana Tunnels orebody is contained within a large volcanic neck. This neck, known as a diatreme, was forced up through the overlying rocks of the region in a violent manner with frequent massive explosions caused by hot magma encountering groundwater. As a result, the diatreme consists of rounded and angular volcanic fragments with a texture resembling poorly cemented concrete. Fracturing occurs in the diatreme. Sulfides of lead (galena), iron (pyrite), zinc (sphalerite) and minor copper (chalcopyrite) occur along these fractures. Gold and silver occur as native metals, but more frequently are present as electrum (gold and silver combined) in intimate association with the sulfides. Although sulfide mineralization occurs throughout the diatreme, it is the center portion that contains the highest concentrations of precious metals. Available information does not show the presence of any significant mercury or arsenic minerals in the ore.

Centennial proposes to develop an open pit mine producing 15,000 tons of ore per day (5,250,000 tons per year). The mine will be developed as a conventional open pit. During the pit life, it is expected that at least 52.5 million tons of ore will be removed giving the mine a minimum life of at least 10 years. The pit will be developed by conventional drilling and blasting. The pit walls will slope at 45 degrees through a series of 30-foot benches. Soils and subsoils in the pit area will be removed and stockpiled for future reclamation use.

Ore will be hauled from the mine to the concentrator in 100 ton trucks. The ore first will be dumped into a 42-inch gyratory crusher and crushed to a nominal 8-inch size before being transferred to a coarse ore stockpile via a covered conveyor belt.

The ore is very soft and additional crushing is not necessary. Feed from the coarse ore stockpile will be sent directly to an autoogenous grinding mill and, then, to a ball mill. The ground ore slurry from the ball mill will be pumped to large capacity flotation cells where pyrite, sphalerite, galena, and minor chalcopryite are recovered. The precious metals will be contained within those minerals. Reagents to be used will include lime, a frothing agent, a collector (xanthate), a promotor (Aeroflot 208 or similar) and a minor amount of conner sulphate.

Of the 15,000 tons processed per day, about 1,200 tons will be recovered as concentrate. The remaining 13,800 tons per day of ground material will be transferred to the bulk tailings pond. The ground waste in the tailings pond is expected to be inert material resembling finely ground white sand. Water in the tailings pond will be reused in the milling process. Reagents used in this process are typical of flotation plants and all decompose or become absorbed by the tailing particles. The ore concentrate will be thickened and pumped to disc filters before being reground in a cyanide solution. Gold and silver will be dissolved from the ore concentrate using sodium cyanide. The

remaining solids in the concentrate (e.g., lead and zinc sulfides) will be washed to remove any cyanide and passed through a second flotation process where the lead and zinc will be separated from each other. The residues of each mineral will be thickened and filtered and shipped to market as lead and zinc concentrates. The market, in this case, will be a lead or zinc smelter perhaps in East Helena, Montana; Trail, British Columbia; or elsewhere. Tailings from this process, made up primarily of pyrite (iron sulfide) will be pumped to a separate sulfide tailings pond.

Dissolved gold and silver contained in the cyanide solution will be mixed with zinc dust to form a precipitate and passed through a filter under low pressure. The gold and silver will adhere to the filter lining and, periodically, be cleaned off, melted in a small furnace, and cast into gold/silver bullion. The cyanide solution will be pumped from the filter and reused in the cyanidization process.

Two separate tailings ponds will be constructed. The first will accommodate the coarse tailings (minus 65 mesh) from the bulk flotation circuit. Water decanted from these tailings will be recycled to the mill. The second and much smaller pond will contain finely ground pyrite (98 percent, minus 270 mesh) which has been exposed to the cyanide solution. The pyrite will be well washed before disposal. Excess water from the sulfide tailings pond will be returned to the concentrate leaching process.

The plant site will include offices, a change house, a wastewater treatment plant, water supply plant, the ore concentrator, repair shops and other support facilities. It is not anticipated that any permanent housing for personnel will be necessary on or near the site. Road access will be from Interstate 15 through the Jefferson City interchange. Electric power is available to the operation from the Montana Power Company's 100-kV transmission lines on the north side of the property.

Total investment is forecast at approximately \$97.3 million. Construction is expected to take 15 months and employ an average of 307 workers. When operational, the mine/mill complex will employ 232 workers during its first three years increasing to 340 employees thereafter (Centennial Minerals Ltd., 1984; Kilborn Engineering, 1984).

THE PROJECT SETTING

The Montana Tunnels property is located southwest of the community of Jefferson City in the northern part of Jefferson County. The county is located in southcentral Montana. It is bounded on the west by Silver Bow, Deer Lodge, and Powell counties; on the north by Lewis and Clark County; on the east by Broadwater County; and on the south by Madison County. Figure 2-1 shows the location of Jefferson County, Boulder, Helena, and the project site, relative to the State of Montana as a whole.

Jefferson County is mountainous but includes several moderately broad intermountain valleys. The mountains are neither extremely high nor rugged. Most of the higher summits are quite flat or gently sloping. Altitudes range from 4,000 feet in the northern part of the county to 9,416 feet at the summit of Crow Peak in the Elkhorn Mountains. The western boundary is formed by the broad back of the Continental Divide that averages about 7,000 feet in altitude.

The county is drained mainly by the Boulder River and Prickly Pear Creek. The headwaters of Boulder River originate on the Continental Divide southwest of Basin near the Powell County line. Above the town of Boulder, the river and its tributaries occupy relatively narrow steep-walled canyons, but below the town, the canyon opens to form a wide intermountain valley that extends southward to the junction of the

[illegible]

FIGURE 2-1: MONTANA TUNNELS PROJECT SETTING

Boulder and Jefferson Rivers about 8 miles east of Whitehall, Montana. Prickly Pear Creek flows northward from its principal source in the Elkhorn Mountains to join the Missouri River a few miles north of Helena (Montana Bureau of Mines, 1960).

The course of Prickly Pear Creek and the Boulder River have been the primary modes of access to central Jefferson County since the area first was settled in the 1860s. The Fort Benton-Helena-Virginia City stage followed those routes which are today served by Interstate 15 and State Highway 69 (Montana State University, 1958).

Jefferson County contains 1,656 square miles of land area and had a 1980 population of 7,029 persons. In that year, the population density was 4.2 persons per square mile, about 22 percent less than Montana as a whole. Human settlement largely is located in the river valleys. Boulder is the largest community in the county with a 1980 population of 1,441 persons. Other settlements include Whitehall on the county's southern border with Madison County; Montana City, Clancy, Alhambra, and Jefferson City north of Boulder along Prickly Pear Creek; and, Basin along Interstate Highway 15 south of Boulder toward Butte (U.S. Bureau of the Census, 1980). Corbin and Wicks are two "ghost towns" near the project site. Both have a small number of inhabitants. Helena is approximately 35 miles north of Boulder, and Butte, 30 miles to the south. See Figure 2-2.

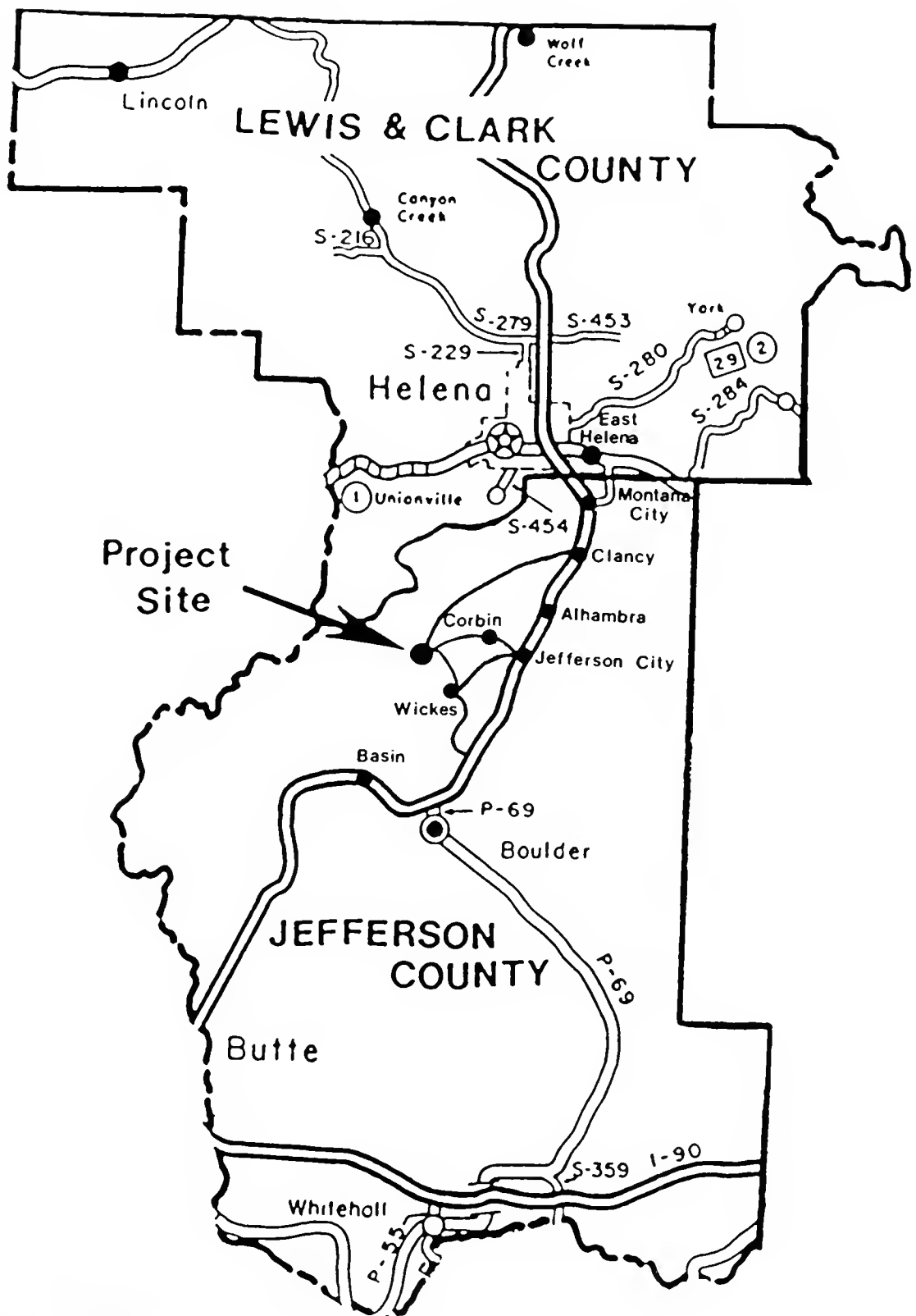


FIGURE 2-2: JEFFERSON AND SOUTHERN LEWIS & CLARK COUNTIES

The climate of Jefferson County is similar to that of other mountainous regions in the northern Rocky Mountains. The average annual precipitation is about 12 inches a year. Snowfall is not excessive except near the summits of the higher mountains. In Boulder, the average maximum daytime temperature is 32⁰F in January and 83⁰F in July (U.S. Weather Service, 1984). Jefferson County includes a part of the Helena and Deer Lodge National Forests. Most of the mountain slopes are forested with dense stands of lodgepole pine. Spruce and fir are plentiful and support a couple of small logging and post and pole operations.

About 53 percent of the county is public land principally the holdings of the U.S. Forest Service. Farm land totals 412,598 acres of which 19.2 percent is used for crops; the remainder is pasture and range. In 1983, there were 252 farms in the county with an average size of 1,637 acres. See Table 2-1. Agriculture principally consists of cattle and calf operations located along the Boulder River between the town of Boulder and Cardwell. Some ranching also occurs on the extreme north end of the county near Clancy and east of Montana City in the Helena Valley (U.S. Department of Agriculture, 1972).

TABLE 2-1
LAND USE IN JEFFERSON COUNTY

	<u>Jefferson County</u>	
	<u>Acres</u>	<u>Percent</u>
Total acreage	1,056,640	100.0
Public land (state, USFS, BLM)	559,582	53.0
Land in farms and private ownership	474,853	44.9
Townsites, water, roads, etc.	22,205	2.1

Agricultural Land

Pasture/rangeland	333,359	80.8
Harvested cropland	42,676	
Irrigated land	31,422	
Total cropland	<u>79,039</u>	<u>19.2</u>
All land in farms	412,398	100.0
Average size of farms	1,637	

Total number of farms (1982) = 252

Source: U.S. Department of Agriculture
Montana Department of Agriculture
Mountain International, Inc.

HARD ROCK MINE IMPACT MITIGATION ACT

The Act

The 1981 session of the Montana Legislature enacted House Bill 718, an act "to create the Hard Rock Mining Impact Board." The act is codified in Sections 90-6-301, et seq., of the Montana Code Annotated. In enacting the legislation, the state declared:

The large-scale development of mineral deposits in the state causes an influx of people into the area of the development many times larger than the number of people directly involved in the mining operation. This influx of people and the corresponding increase in demand for local government facilities and services creates a burden on the local taxpayer. There is a significant lag time between the time when additional tax revenue is available as a result of the increased tax base. In addition, local government units in whatever jurisdiction the development is not located may receive substantial adverse economic impacts without benefit of a major increased tax base in the future. There is therefore a need to provide a system to assist local government units in meeting the initial financial impact of large-scale mineral development.

HB 718's substantive content falls into three general categories. It creates the Hard Rock Impact Board and specifies its powers, requires developers of large-scale mineral developments to prepare an impact mitigation plan, and mandates local review of and participation in the planning process.

The Hard Rock Impact Board is a five member panel appointed by the Governor and attached to the Montana Department of Commerce for

administrative purposes. The board is both administrative and quasi-judicial in nature, empowered to hire and retain staff, adopt rules governing its proceedings, award grants to local governments, review impact mitigation plans submitted by mineral developers, and conduct hearings and make determinations regarding such plans as specified by law.

HB 718 requires a mineral developer to prepare an impact plan whenever the construction or operation of a hard rock mine and associated milling facility will:

- Employ at any given time at least 100 people. (Reduced to an average of 75 people under current law.)
- Cause, or be expected to cause, an increase in estimated population of at least 15 percent in a local government unit when measured against the average population of the local government unit in the three-year period immediately preceding the commencement of the construction of the mining facility. (Repealed.)

The law further specifies that a local unit of government means:

- A political subdivision of this state including a county, city, town, school district, or other specific district that provides any of the services referred to in subsection (1)(c) of (Section 8) of the act.

The impact mitigation plan is to include descriptions of:

- The timetable for project development
- The estimated number of persons in-migrating into the project area.
- The increased capital and operating costs to local governments

for the provision of services which can be expected as a result of development.

- The financial or other assistance the developer will give local government to meet the increased need for services. The developer may pay such costs through grants, prepayment of taxes, or education impact bonds.

Local government is required to review the mineral developer's impact mitigation and notify the Hard Rock Board of its objections to any or all portions of the plan. If local government objects to the plan, the developer and local government are to attempt to resolve the conflict. If the two parties cannot resolve their differences, the Hard Rock Board will conduct a hearing and issue its determination.

The 1983 Legislative assembly enacted several bills that amended the original content of HB 718:

- HB 472:
1. Mandates that the mineral developer provide financial or other assistance as necessary at a local government's request so that it may review the developer's impact mitigation plan.
 2. Provides a mechanism to amend the original impact mitigation plan. The impact plan may be amended when:
 - a. employment at the large-scale mineral development is forecast to increase or decrease by at least 100 people over or under the employment levels contemplated by the approved impact plan; or
 - b. changes in the large-scale mineral development cause, or can be expected to cause, an increase in estimated population of at least 15 percent in a local government unit when measured against the average population of the local government unit in the three-year period

preceding the commencement of new construction or new operations of the mining facility; or

- c. When local government and the developer mutually agree to amend the plan. The plan may contain its own provisions for amendment.
- d. it becomes apparent that an approved impact plan is materially inaccurate because of errors in assessment and two years have not elapsed since the date the facility begins commercial production; or
- e. the governing body of an affected county and the mineral developer join in a petition to amend the impact plan.

- HB 446:
- 1. Empowers the Hard Rock Board to award grants and loans to local governments where mining related activity has been significantly curtailed.
 - 2. Revises the tax rates paid by mines under Montana's Metalliferous Mine Tax.

- HB 870:
- 1. Allocates the taxable value of a new mine/mill to units of local government based upon the proportion of the workforce residing in those areas when the impact plan identifies a jurisdictional revenue disparity between two or more units of local government.

In 1985, the Montana Legislature again amended the Hard Rock Impact Mitigation Act through the passage of HB 912. There were numerous amendments most of which simply fine tuned the act by clarifying ambiguous language. The more substantive changes included:

- 1. For mines permitted after May 18, 1981, the Montana Board of Land Commissioners is mandated to suspend an operator's mine permit if the developer has not obtained a waiver from the impact plan requirement or has failed to comply with the provisions of the Hard Rock Impact Mitigation Act.
- 2. Annual reports to the Department of State Lands will include the number of persons employed by the mining company during the previous year.

3. If the Department of State Lands determines that a company will become a "large scale" mineral developer subject to the Hard Rock Impact Mitigation Act, it shall serve written notice of the fact to the company, the Hard Rock Impact Board, and county where the operation is located.
4. Local government units have been defined to mean a county, city, town, school district and any of the following independent special districts: rural fire district, public hospital district, refuse disposal district, county water and sewer district, county water district, or county sewer district. The new language eliminates ambiguity over which special districts were to be covered by the impact plan.
5. A large scale mineral developer is now defined as one "for which the average number of persons on the payroll of the mineral developer and of contractors at the mineral development exceeds or is projected to exceed 75 for any consecutive six month period." The new language reduces the threshold for triggering an impact plan from 100 workers and eliminates the 15 percent change in population criterion.
6. The 30 day negotiation period following the 90 day local government review can be extended if both parties agree.
7. A mineral developer can make impact payments directly to the unit of local government or through the state Hard Rock Board.
8. Operating mineral projects that plan to expand can seek a waiver from the requirements of the impact plan following notice and public hearing. Waivers are granted by the Hard Rock Impact Board.
9. Tax credits to offset prepayments made by the developer for impact assistance shall be granted as specified in the plan. This revision eliminates a cumbersome formula that was used to calculate potential tax credits in each fiscal year.

House Bill 912, containing the provisions listed above, becomes effective on July 1, 1985.

Relationship of the Hard Rock Impact Mitigation Act to the Montana Tunnels Project

The proposed Montana Tunnels Project will employ up to 551 workers during its construction and between 232 and 340 workers during its operation. As such, the project qualifies as a "large-scale mineral development" under the Hard Rock Impact Mitigation Act. The project is thus subject to requirements mandating the provision of an impact plan and, if necessary, to provide financial assistance to units of local government when the in-migration of project construction workers, the mine/mill operating workforce, and their families adversely affect local government.

This impact plan is based on Centennial Minerals' commitment and desire to hire at least 80 percent of its total workforce from within 50 miles of the Montana Tunnels Project site from Jefferson, Lewis and Clark, Silver Bow and Broadwater counties. As such, the population of in-migrating workers and families is expected to be relatively small.

When preparing the socioeconomic impact assessment for the Montana Tunnels Project, a series of alternative impact scenarios were developed to measure the likely degree of socioeconomic change that Jefferson County could experience. Those scenarios were based on the ratio of local to non-local workers the project might employ ranging from an 93/7 ratio (optimum) down to a 80/20 ratio (worst case).

After reviewing:

- The site and proposed size of the Montana Tunnels mine/mill complex;
- Its manpower requirements;
- The opportunity to hire a substantial portion of the workforce from Jefferson, Lewis and Clark, Silver Bow and Broadwater counties;
- The company's commitment to hire and train local workers for jobs in the facility, as necessary;
- The quantity, type, capacity, condition, and distribution of housing, transportation, and governmental services;
- Existing and future economic and population trends in Jefferson, Lewis and Clark, and Silver Bow counties;
- The financial resources of local government;
- Anticipated patterns of mine/mill population in-migration and settlement; and
- The likely increase in demand for new or additional services caused by the in-migration of mine workers;

the 80/20 impact scenario appears to be an achievable target. In fact, the 80/20 scenario appears to overstate the likely degree of project in-migration and should thus be considered a worst case scenario. This Impact Mitigation Plan is based on the assumptions and information specified by the 80/20 impact scenario, unless otherwise specified.

Therefore, the following jurisdictions may receive a population increase or change in service demand sufficiently large to require the expansion of services and/or increased operation and maintenance costs:

- Jefferson County
- Town of Boulder
- Jefferson High School District #1
- Clancy Elementary School District #1
- Boulder Elementary School District #7
- Montana City Elementary School District #27

- Jefferson County Refuse Disposal District
- Montana City Rural Fire District
- Boulder Valley Rural Fire District

The impact mitigation plan does not view local governments in either Silver Bow or Lewis and Clark counties as affected units of government within the meaning of the Montana Hard Rock Mine Impact Assistance Act. Silver Bow County has been excluded because its distance from the Montana Tunnels Project site makes it an unlikely candidate to experience the in-migration of mine workers and families, a primary cause of socioeconomic change. It is anticipated that the Montana Tunnels Project will employ a number of existing Silver Bow County residents who will commute to work each day. Those individuals own homes in and near Butte, receive governmental services from existing institutions, and are socially and economically a part of that community. Given existing attachments to Butte/Silver Bow, it is unlikely that many Silver Bow County workers will relocate nearer the Montana Tunnels mine site in the near term. Moreover, as existing residents of Butte/Silver Bow County, they are part of the local government's service demand and do not constitute "growth" or an "impact" upon those services as a result of their employment by Centennial Minerals.

After examining the availability and distribution of housing in southern Lewis and Clark County and the existing resources and capacity of the local government in and adjacent to Helena, it is unlikely that

population in-migration caused by the Montana Tunnels Project will cause an adverse economic impact on any governmental entity. The only two governments whose service demands approach their available capacity are the East Helena and Warren/Darcy elementary school districts. The East Helena district is in the process of building a new elementary school whose capacity will be more than sufficient to accommodate the children of in-migrating workers at Montana Tunnels. The residents of the Warren/Darcy School District recently elected to annex their school district (#3) with the Helena Elementary School District, an entity currently operating at approximately 75 percent of capacity.

Increased revenues from household property taxation, service fees, and state School Foundation payments to the public schools will exceed cost increases, if any, experienced by local government units in southern Lewis and Clark County.

Workforce and Population Monitoring

An impact assessment plan is a forward looking document. It attempts to forecast a state of affairs in the future. It does so by examining historical trends, existing conditions, and expected changes that may alter the future. Of necessity, its descriptions of the future are based on a series of assumptions about what will occur, the extent of such change, and its short- and long-term implications. As such, forecasts contain some degree of error. The world and society at-large

are not sufficiently predictable to be fully accounted for in forecasting models.

Recognizing that this plan is based on a series of assumptions about the number of construction and mine workers who will move to Jefferson and Lewis and Clark counties and where they will locate their residences, the Montana Tunnels Project will monitor the size of the project workforce and its related population on a monthly basis. The monthly monitoring process will begin prior to actual project construction and continue until the mine/mill facility is fully operational. Thereafter, workforce/population monitoring will occur periodically, consistent with rules adopted by the Montana Department of State Lands and the Montana Hard Rock Impact Board.

To implement the monitoring program, Centennial Minerals proposes to create a monitoring committee consisting of representatives from local units of government, the contractor building the project, and Centennial Minerals. The committee will include one representative from each of the following entities:

- Jefferson County
- Town of Boulder
- Clancy School District
- Montana City School District
- Boulder School Districts
- Prime Contractor
- Centennial Minerals

Staff support for the monitoring committee will be provided either by Mountain International, Inc., the socioeconomic consultant for the

Montana Tunnels Project or, by Centennial's personnel department. The monitoring committee will help develop the monitoring instrument, periodically review the findings of the monitoring process, inform local government of the project's employment, social, and demographic trends, and assist both the company and local jurisdictions to develop amendments to the impact plan, if necessary.

Should the actual level of immigration or a settlement pattern develop for construction and/or mine workers that is significantly different from the forecasts contained in this document, and if it appears as though a local government might incur costs not anticipated in the plan, several courses of action are available to the developer, including:

1. Develop or modify personnel policies including the provision of economic incentives to induce employees to reside in local jurisdictions with greater capacity to absorb their presence.
2. Develop and implement a service delivery arrangement with employer households or other private providers to prevent in-migrating households from placing a service demand on a particular unit of government. Examples include:
 - a) Reimbursing a household for the cost of educational services provided in a school district outside Jefferson County;
 - b) Underwriting the cost of employee travel to promote increased workforce commuting;
 - c) Sponsoring private service delivery such as solid waste collection or fire protection.
3. Revise the construction schedule to change manpower loading and the consequent potential for population in-migration.
4. Amend the impact plan to provide direct financial assistance to affected units of local government.

If the Montana Tunnels Project is developed with or close to the impact assumptions contained in this volume, none of the concepts listed above is likely to be necessary. Any such action would be taken in concert with the work of the Montana Tunnels Monitoring Committee.

The Developer's Expectations

The Montana Hard Rock Impact Mitigation Act establishes a planning partnership between Centennial Minerals and units of local government in Jefferson County. The company accepts, indeed, looks forward to its role in the process of establishing a series of long-term working relationships with local government as the company joins the local community.

As the developer, Centennial Minerals has some expectations regarding how the Hard Rock Impact Plan will be reviewed and implemented, as follows:

1. Centennial Minerals considers impact to occur at the time the immigrant mine or construction worker locates within Jefferson county and one or more of its jurisdictions.
2. Idle service capacity in local government units will be allocated to immigrants at the time they enter the county or otherwise register to receive services. Idle capacity will be allocated to all newcomers equally based upon their arrival in the jurisdiction. Local governments shall not withhold services from Montana Tunnel employees or otherwise attempt to reserve idle service capacity for the non-mine population.
3. Centennial Minerals is responsible for financing the cost service expansions and/or increases in net operating expenses for the population that it has directly provided employment. That is, for its employees, those of its contractors, and

their families. Centennial Minerals is not responsible for service delivery expenses caused by other concurrent or subsequent events be it new industry, subdivision development, or an increase in the birth rate, etc.

4. Finally, Centennial Minerals is not responsible for service delivery expansions, repairs, or increased operating costs that are related to events or conditions that existed prior to the mine being developed or which are reasonably likely to occur even if the mine is not developed. Two such examples are:
 - a) Repairing existing service infrastructure whose deteriorated condition existed prior to mine construction;
 - b) Expanding the facilities of a school district whose enrollment has been and likely will continue to increase even if the mine is not developed.

To the extent that a mine related impact is tied to an existing, deficient service, Centennial Minerals expects to make impact assistance available in proportion to its share of the needed improvements.

SECTION THREE

ASSUMPTIONS USED TO PROJECT CHANGES IN POPULATION, LOCAL
GOVERNMENT COSTS, AND REVENUES
CAUSED BY THE MONTANA TUNNELS PROJECT
AND
PROJECTED POPULATION CHANGE

PROJECTION ASSUMPTIONS

This section describes the major assumptions used to project and allocate changes in population, local government costs, and revenues likely to be caused by the Montana Tunnels Project. Where relevant, the assumptions are followed by a brief explanation describing their origin.

Assumption #1

Population change caused by the Montana Tunnels Project will be a function of the amount and type of manpower employed to build and operate the project. Workforce estimates and the anticipated development schedule were provided by Centennial Minerals. Construction manpower is estimated to range between 200 and 551 employees during a 15-month construction period. The operating workforce will be 232 employees during the first three years of operation, increasing to 340 workers thereafter.

Table 3-1, entitled Life of Mine Employment Loading, shows the estimated number of project workers during each of the mine's four major phases of development, including:

- | | |
|------------------------------|------------------------------|
| - The construction period | October 1985 - December 1986 |
| - Initial operating level | January 1987 - December 1989 |
| - Second stage of operations | January 1990 - January 1997 |
| - Reclamation and demolition | January 1997 - December 1997 |

For impact planning purposes, the construction and initial year of commercial operation are of primary importance. During that time, the project will not be assessed for tax purposes and it is possible that

TABLE 3-1

LIFE OF MINE EMPLOYMENT LOADING

	<u>4th Q</u> <u>1985</u>	<u>1st Q</u> <u>1986</u>	<u>2nd Q</u> <u>1986</u>	<u>3rd Q</u> <u>1986</u>	<u>4th Q</u> <u>1986</u>	<u>1st Q to 4th Q</u> <u>1987</u>	<u>1st Q to 4th Q</u> <u>1989</u>	<u>1st Q to 4th Q</u> <u>1990</u>	<u>1st Q</u> <u>1997</u>	<u>2nd Q</u> <u>1997</u>	<u>3rd Q</u> <u>1997</u>	<u>4th Q</u> <u>1997</u>	<u>1st Q</u> <u>1998</u>
Construction (contract)	200	210	368	551	208								
Operations	16	16	16	16	16	232	340		96	42	16	5	3
Reclamation									20	20	20	12	
Demolition (contract)										25	25	15	
Total	216	226	384	567	224	232	340		116	87	61	32	3

Source: Kilborn Engineers
Centennial Minerals Ltd.
Mountain International, Inc.

in-migrating workers and their families will make service demands on units of local government that increase costs.

During the construction period, Centennial Minerals will maintain a 16-person construction management team in the area based at an office in Helena. Thirteen individuals on the team are expected to be senior management or technical personnel and likely will be in-migrants to the area. Table 3-2 shows Montana Tunnels' operational manpower loading by phase of project development, job title, and anticipated residency status. The estimate of residency status reflects the optimum condition. That is, Centennial would need to recruit only 17 workers, all senior management/technical personnel, from outside the local area.

Table 3-3 shows the construction manpower loading by trade. The construction process starts with 200 workers during the first quarter and escalates to 551 employees in the fourth quarter, the peak period, before falling back to near 200 workers. The demand for construction craftsmen varies from quarter to quarter. Skills involved in site preparation such as carpenters and equipment operators tend to be more common during the initial phases of construction. Workers needed to install mechanical systems or do "finish" work such as pipefitters, electricians, and painters are more numerous near the close of construction.

TABLE 3-2

OPERATIONS MANPOWER LOADING BY JOB TITLE AND RESIDENCY STATUS

<u>General Administration</u>				
<u>Position</u>	<u>During Construction</u>	<u>During Operation</u>		<u>Anticipated Residency Status</u>
		<u>Year 1-3</u>	<u>Year 4 Plus</u>	
Mine Manager	1	1	1	In-migrant
Chief Accountant	1	1	1	In-migrant
Accountant	-	2	2	Local
Purchasing Agent	-	1	1	Local
Warehouseman	-	3	3	Local
Safety Supervisor	-	1	1	In-migrant
Personnel Manager	-	1	1	In-migrant
Environmental Engineer	-	1	1	In-migrant
Clerk/Typist	-	4	4	Local
Security	-	4	4	Local
Janitor	-	1	1	Local
Subtotal	<u>2</u>	<u>20</u>	<u>20</u>	

<u>Mine Operations</u>				
<u>Management</u>				
Mine Superintendent	1	1	1	In-migrant
General Production Foreman	1	1	1	In-migrant
General Maintenance Foreman	1	1	1	In-migrant
Production Foreman	-	4	8	Local
Maintenance Foreman	-	5	5	Local
Chief Mine Engineer	1	1	1	In-migrant
Pit Planner	1	2	2	In-migrant
Geologist	1	1	1	In-migrant
Grade Control	-	4	4	Local
Surveyor/Technician	-	4	4	Local
Maintenance Planner	-	1	1	Local
Clerk/Secretary	<u>2</u>	<u>2</u>	<u>2</u>	Local
Subtotal	<u>8</u>	<u>27</u>	<u>31</u>	

TABLE 3-2

OPERATIONS MANPOWER LOADING BY JOB TITLE AND RESIDENCY STATUS (CONTINUED)

<u>Mine Operations (Continued)</u>				
<u>Position</u>	<u>During Construction</u>	<u>During Operation</u>		<u>Anticipated Residency Status</u>
		<u>Year 1-3</u>	<u>Year 4 Plus</u>	
<u>Operations</u>				
Driller	-	6	12	Local
Blaster	-	3	6	Local
Shovel Operator	-	12	24	Local
Truck Driver	-	31	80	Local
Equipment Operator	-	13	20	Local
Utility Man	-	4	4	Local
Laborer	-	4	4	Local
Subtotal		<u>73</u>	<u>150</u>	
<u>Maintenance</u>				
Lead Mechanic	-	5	10	Local
Mechanic	-	6	12	Local
Welder	-	4	6	Local
Service Man	-	4	8	Local
Tire Man	-	1	1	Local
Mechanical Helper	-	10	20	Local
Lead Electrician	-	1	1	Local
Electrician	-	4	4	Local
Electrical Helper	-	1	1	Local
Subtotal		<u>36</u>	<u>63</u>	
MINING DEPARTMENT				
TOTAL	8	136	244	

<u>Milling Operations</u>				
<u>Management</u>				
Mill Superintendent	1	1	1	In-migrant
Mill Operations				
Foreman	1	1	1	In-migrant
Mill Metallurgist	1	1	1	In-migrant
Assayer	-	3	3	Local
Refinery Supervisor	1	1	1	In-migrant
Shift Foreman	-	4	4	Local
Mill Maintenance				
Foreman	1	1	1	In-migrant
Maintenance Planner	-	1	1	Local
Clerk/Secretary	1	1	1	Local
Subtotal	6	14	14	

TABLE 3-2

OPERATIONS MANPOWER LOADING BY JOB TITLE AND RESIDENCY STATUS (CONTINUED)

<u>Milling Operations (Continued)</u>				
<u>Position</u>	<u>During Construction</u>	<u>During Operation Year 1-3</u>	<u>Year 4 Plus</u>	<u>Anticipated Residency Status</u>
<u>Operations</u>				
Crusher Operator	-	3	3	Local
Grinding Operator	-	4	4	Local
Flotation Operator	-	4	4	Local
Flotation Helper	-	4	4	Local
Cyanide Operator	-	4	4	Local
Cyanide Helper	-	4	4	Local
Refinery Operator	-	1	1	Local
Sampler/Bucker	-	1	1	Local
Laborer	-	6	6	Local
Equipment Operator	-	1	1	Local
Subtotal		32	32	
<u>Maintenance</u>				
Electrician	-	4	4	Local
Mechanic	-	12	12	Local
Helper	-	12	12	Local
Instrumentation	-	2	2	Local
Subtotal		30	30	
MILL DEPARTMENT TOTAL	6	76	76	
<u>GRAND TOTAL</u>	16 ==	232 ===	340 ===	

Source: Centennial Minerals, Inc.
Mountain International, Inc.

TABLE 3-3
MONTANA TUNNELS CONSTRUCTION MANPOWER LOADING BY TRADE

<u>Trade</u>	<u>1st Qtr</u>	<u>2nd Qtr</u>	<u>3rd Qtr</u>	<u>4th Qtr</u>	<u>5th Qtr</u>
Boilermakers	10	10	8	8	
Building Sub-trades				15	
Carpenters	25	23	20	43	20
Electricians	4	4	6	30	18
Equip. Operators	25	26	24	21	10
Iron Workers	25	40	40	48	8
Laborers	52	52	95	146	60
Linemen			4		
Machinists			7	50	26
Mechanics	4	3	4	5	2
Mine Equip. Operators	20	20	73	86	
Painters					4
Pipefitters				25	25
Roofers			8		
Sheet Metal Workers		5	24		
Teamsters	20	12	12	14	6
Warehousemen	2	2	3	4	3
Welders	3	3	14	30	18
Office Staff & Management	<u>10</u>	<u>10</u>	<u>26</u>	<u>26</u>	<u>8</u>
Total	200	210	368	551	208

Source: Centennial Minerals Inc.

Assumption #2

For the Montana Tunnels Project, the local area is defined as that region within 50 miles or, an average one hour, one-way commute time to the Montana Tunnels Project site. As such, the local area includes Jefferson County, southern Lewis and Clark County (i.e., Helena and Helena valley), the city of Butte and immediately adjacent areas in Silver Bow County, and a portion of Broadwater County near the community of Winston, and, possibly as far as Townsend, Montana.

Assumption #3

There is a large supply of skilled and unskilled labor available in the local area that could be employed both in the construction and operation of the Montana Tunnels Project. The supply of labor appears to be sufficient to fully staff the mine's construction and/or operations workforce except for senior management/technical personnel, construction ironworkers, pipefitters, and sheetmetal workers. For planning purposes, it is assumed that 80 percent of the construction manpower required in quarters one, two, three, and five will be recruited locally. During the fourth quarter, 70 percent will be locally hired. During that quarter (spring-summer), other general commercial construction in the region will compete for construction labor and may potentially reduce the project's ability to hire as many local workers as it might desire. The ratio of local to non-local construction workers described here can be considered a worst case scenario.

Assumption #4

Skills necessary for mine operations are readily available in the local area and Centennial will be able to hire a minimum of 80 percent of its operating workforce in the region. Furthermore, Centennial Minerals will train workers as necessary for jobs within the proposed mine and mill. Therefore, it will not be necessary for potential workers to have had previous work experience in mine/mill facilities. In general, individuals with experience in a broad range of blue collar occupations will be recruited for positions at Montana Tunnels.

Assumption #5

There is a strong degree of local interest in employment at Montana Tunnels. In the absence of a competing industrial development in the local area or, indeed, in southwestern or

western Montana, Centennial Minerals will have little difficulty attracting workers.

Assumption #6

There will be no major construction projects or industrial development in or adjacent to the local area during the construction and initial operating phases of the Montana Tunnels Project. The only projects likely to compete with Montana Tunnels for a significant share of the skilled construction or mine operating workforce are the Beal Project, a proposed gold mine southwest of Butte, and Western Energy's proposed Chartam Project near Winston, a precious metals mine, as well. The Beal project is revising its operating permit application and likely will not be developed at the same time Centennial proposes to open Montana Tunnels. The Chartam Project is in its initial stage of planning and probably is 24 to 36 months away from receiving an operating permit.

Estimating the number and location of workers available for work on a project like that of Montana Tunnels is difficult since the labor force is not a static entity. It changes daily. Therefore, estimates regarding available manpower must be considered approximate, derived from a series of indirect measurements of the local labor force. Table 3-4 shows the number and rate of unemployed persons in Jefferson, Lewis and Clark, and Silver Bow counties by month during the past two years. In 1984, there were an average of 3,853 persons unemployed and looking for work or approximately seven times the peak number of construction workers and over 16 times the workers needed by the mine/mill during its initial phase of commercial operation. The high rate of unemployment has persisted into 1985. There were 3,494 people seeking work during February, the latest month for which information is currently available. Of course, not all unemployed workers are

TABLE 3-4

MONTHLY TOTAL AND PERCENT UNEMPLOYED
IN JEFFERSON, LEWIS & CLARK,
AND SILVER BOW COUNTIES, 1983-1984

	Jefferson County		Lewis & Clark County		Silver Bow County	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
<u>1984</u>						
December	281	6.5%	1,597	6.0%	1,376	7.6%
November	257	6.3%	1,592	5.9%	1,310	7.4%
October	240	6.4%	1,467	5.4%	1,440	8.0%
September	203	5.8%	1,535	5.7%	1,475	8.5%
August	260	7.9%	1,678	6.3%	1,878	10.3%
July	277	8.7%	1,719	6.4%	1,976	10.9%
June	294	9.3%	1,756	6.6%	2,028	11.5%
May	273	8.4%	1,582	5.8%	1,711	9.8%
April	318	9.7%	1,740	6.5%	1,881	10.9%
March	352	10.5%	1,957	7.3%	2,090	12.1%
February	341	9.8%	2,047	7.8%	2,219	12.9%
January	412	11.0%	2,149	8.2%	2,460	14.1%
Average	293	8.3%	1,738	6.5%	1,822	10.3%
<u>1983</u>						
December	333	10.5%	1,984	7.3%	2,173	12.4%
November	329	10.0%	1,803	6.7%	2,244	12.8%
October	302	9.3%	1,581	6.1%	2,058	11.9%
September	286	9.2%	1,381	5.5%	2,074	12.7%
August	331	10.4%	1,698	6.6%	2,406	14.2%
July	341	9.7%	1,804	7.0%	2,649	15.3%
June	301	8.5%	1,704	6.6%	2,088	12.2%
May	294	8.6%	1,690	6.6%	1,830	10.6%
April	335	10.0%	1,642	6.4%	1,944	11.0%
March	362	11.5%	1,937	7.4%	1,975	11.1%
February	397	12.5%	2,171	8.3%	2,119	11.9%
January	375	12.2%	2,395	9.1%	2,119	11.9%
Average	350	10.4%	1,901	7.2%	2,242	12.5%

Source: Montana Department of Labor and Industry
Mountain International, Inc.

qualified or necessarily interested in working in a mine/mill facility. Table 3-5 contains a listing of 17 selected occupational titles that generally correspond to the type of skills that will be needed by Montana Tunnels. The Butte and Helena Job Service offices collectively serve the proposed mine's local labor recruitment area including Jefferson County. Throughout the latter part of 1984, there were an average of 1,949 persons seeking employment in occupations similar to those at the proposed mine. Even if clerical workers and bookkeepers, two large occupational groups for which there will be limited need at Montana Tunnels, are removed from the calculation, the remaining, largely blue collar labor force still includes 1,278 potential workers. The ten construction crafts listed on the top of Table 3-5 includes 1,132 individuals seeking work. That number is better than twice the amount needed at the peak of construction and over five times the number needed for mine operation during the first three years.

Two other, albeit indirect, measurements of the size of the skilled labor force in the Helena-Butte area are provided in Tables 3-6 and 3-7. The first table shows the number of Anaconda Company mine/mill/smelter workers that were laid off when the company closed its facilities in Butte and Anaconda. The individuals on the "recall list" are considered eligible for rehire should the Anaconda Company decide to re-open its facilities. As such, the recall list is a measure of skilled mine/mill workers residing in Silver Bow and Deer Lodge counties when Anaconda ceased operations. All of those workers

TABLE 3-5

AVERAGE MONTHLY NUMBER OF JOB APPLICANTS
BY SELECTED OCCUPATIONAL TITLE
HELENA AND BUTTE JOB SERVICE OFFICES

	<u>Helena</u> ¹	<u>Butte</u> ²	<u>Total</u>
Boilermaker/welder	38	43	81
Carpenter/millwright	70	35	105
Cement Finisher/mason	10	11	21
Equipment operators	65	64	129
Ironworker	2	14	16
Laborer/material handler	238	198	436
Mechanic/machinist	67	70	137
Pipefitter/plumber	9	19	28
Sheetmetal worker	7	5	12
Teamster/truck driver	95	72	167
Bookkeeper	73	50	123
Clerical	424	124	548
Faller/logger/sawmill worker	44	6	50
Security guard	24	21	45
Smelterworker	1	4	5
Computer operator	25	6	31
Engineers	<u>9</u>	<u>6</u>	<u>15</u>
Total	1,201	748	1,949

¹June 1984-January 1985.

²September 1984-January 1985.

Source: Montana Job Service
Mountain International, Inc.

TABLE 3-6
ANACONDA COMPANY MANPOWER RECALL LIST¹

<u>Occupation</u>	<u>Butte/Anaconda Location</u>
Boilermakers/welders	87
Carpenters/Millwrights	13
Electricians/Linemen	86
Equipment Operators/ Drillers/Shovel Operators/ Cat Operators, etc.	226
Ironworkers	24
Machinists/Mechanics (truck, heavy equipment)	237
Pipefitters/Plumbers/Steamfitters	18
Sheet Metal Workers	4
Teamsters/Truck Drivers	315
Smeltermen/Mill Workers/Laborers	574

¹ November 1984.

Source: Anaconda Minerals Company
Mountain International, Inc.

TABLE 3-7

SKILLED MINE/CONSTRUCTION WORKERS AVAILABLE
IN SILVER BOW AND LEWIS & CLARK COUNTIES

Skilled Workers with Open Pit
Experience in Butte/Silver Bow County
(Abstracted from Montoro Gold Company
HB 718 Plan for the Beal Project -- 1983)

<u>Skills</u>	<u>Number Seeking Employment</u>
Shovel Operators	7
Off-the-Road Truck Drivers	191
Crane Operators	10
Drillers	16
Driller Helpers	8
Blasters	4
Electricians	79
Dozer Operators	5
Drag Line Operators	2
Loader Operators	6
Ironworkers	<u>48</u>
Total	368

Helena Area Construction Craft Manpower

(Abstracted from Socioeconomic Assessment:
Hauser Dam Expansion Project -- 1982)

<u>Craft</u>	<u>Construction Craft Manpower</u>
Laborers	100
Equipment Operators	200
Teamsters	350
Carpenters/Millwrights	300
Cement Masons	15
Pipefitters	50
Iron Workers	12
Electricians	50

Source: Montoro Gold Mining Company
Western Analysis, Inc.
Mountain International, Inc.

are not necessarily available for employment by Centennial Minerals. Some have left the region, others have found employment in other industries and occupations, but some are unemployed or underemployed.

Table 3-7 contains two measurements of the number of skilled mine and construction workers abstracted from recent socioeconomic assessments conducted in Silver Bow and Lewis and Clark counties. A draft Hard Rock Impact Mitigation Plan for the Beal Mining Project of the Montoro Gold Company in 1983 counted 368 experienced mine workers seeking work. A 1982 socioeconomic assessment for the proposed expansion of Hauser Dam northeast of Helena (Western Analysis), identified the estimated number of construction craft workers in the Helena area. Tables 3-5 through 3-7 reinforce the information compiled by the Montana Job Service regarding the size and availability of a skilled manpower pool in the Helena-Butte area who are available for work constructing and/or operating the Montana Tunnels project.

Table 3-8 summarizes Montana Tunnels construction manpower loading estimates and compares them with an estimate of workers available locally. In most cases, the number of available workers outnumber peak demand by a factor ranging from two to eight times. Again, ironworkers, pipefitters, and sheetmetal workers appear to be in short supply.

TABLE 3-8

CONSTRUCTION CRAFT MANPOWER LOADING AND LOCAL AVAILABILITY

<u>Craft</u>	<u>Average Number Required (Non-Peak)¹</u>	<u>Construction Peak Period</u>	<u>Peak Number of Required Workers</u>	<u>Workers Available Locally</u>
Boilermakers/Welders	17	4th Qtr	38	81
Carpenters/Roofers	24	4th Qtr	43	105
Electricians/Linemen	9	4th Qtr	30	70
Equipment Operators (includes mine)	50	4th Qtr	107	129
Ironworkers	28	4th Qtr	48	16
Laborers/Building Sub-Trades and Warehousemen	68	4th Qtr	165	436
Machinists/Mechanics	13	4th Qtr	55	137
Painters	--	5th Qtr	4	NA
Pipefitters/Plumbers	--	4th-5th Qtr	25	28
Sheetmetal Workers	--	3rd Qtr	24	12
Teamsters/Mine Truck Drivers	<u>11</u>	<u>1st Qtr</u>	<u>20</u>	<u>167</u>
Total	220	4th Qtr	NA	NA

¹ Average of the four non-peak quarters.

Source: Mountain International, Inc.

Table 3-9 identifies the number and residence of persons who have submitted a formal job application with Centennial Minerals for work at the Montana Tunnels Project. The employment applications were not solicited. The company has not advertised job openings although local newspapers in the region have carried several articles describing the project. Since early July 1984, the company has received a total of 858 job applications including 770 applications, or 90 percent, from Montana residents and 88 from persons outside the state including Canada and Peru. Over 400 applications have been received in the last three months. Applications from the local area constitute 68 percent of the total. Jefferson County residents have submitted 190 applications; Lewis and Clark, 223; and Butte-Silver Bow, 174. In Jefferson County, 90 applications have been received from Whitehall-Cardwell area residents, or 47.4 percent of those from Jefferson County.

Assumption #7

The distribution of in-migrating mine construction workers among local jurisdictions will be a function of the availability and price of housing, commuting distance, and social/cultural amenities desired by the in-migrating workers.

Assumption #8

In-migrating construction workers are more likely than the mine operations workforce and public-at-large to be young and single, or married with small families, and, as such, a larger share of the in-migrating construction workforce is likely to reside in Jefferson County than is the case among the mine operations crew.

TABLE 3-9
JOB APPLICANTS BY PLACE OF RESIDENCE

<u>County</u>	<u>January 1985 Number</u>	<u>April 1985 Number</u>
Beaverhead	0	2
Broadwater	9	18
Carbon	0	1
Cascade	2	7
Chouteau	0	1
Daniels	1	1
Dawson	1	1
Deer Lodge	23	36
Fallon	0	1
Fergus	3	6
Flathead	2	4
Gallatin	10	11
Granite	4	6
JEFFERSON	121	190
Judith Basin	0	2
Lake	1	2
LEWIS AND CLARK	118	223
Madison	5	11
Meagher	0	1
Mineral	2	2
Missoula	5	7
Phillips	2	3
Powell	6	36
Richland	1	2
Roosevelt	2	3
Rosebud	3	8
Sanders	0	1
SILVER BOW	119	174
Stillwater	1	1
Valley	1	1
Yellowstone	<u>4</u>	<u>8</u>
Total	446	770

TABLE 3-9

JOB APPLICANTS BY PLACE OF RESIDENT (CONTINUED)

<u>Out-of-State Residents</u>	<u>January 1985 Number</u>	<u>April 1985 Number</u>
Arizona	3	3
California	4	5
Canada	2	3
Colorado	7	9
Idaho	3	13
Indiana	1	1
Kentucky	0	1
Michigan	1	1
Minnesota	2	2
Missouri	0	2
Nevada	0	8
New Mexico	2	5
Oregon	2	3
Peru	0	1
South Dakota	0	1
Utah	4	7
Washington	3	5
Wyoming	<u>5</u>	<u>18</u>
Total	39	88
Grand Total	485	858
<u>Jefferson County Applicants</u>		
Northern Jefferson County Clancy/Montana City/ Jefferson City area	24	44
Central Jefferson County Boulder/Basin area	45	56
Southern Jefferson County Whitehall/Cardwell area	<u>52</u>	<u>90</u>
Total	121	190

Source: Mountain International, Inc.

For impact planning purposes in-migrants have been allocated as follows:

Construction Workers

- a. 50 percent will reside in Jefferson County; 50 percent in Lewis and Clark County.
- b. Within Jefferson County, half of the construction workers are allocated to the Clancy Elementary School District and half to the Boulder Elementary School District. There is little temporary housing available in the Montana City area and it is likely to attract few, if any, construction workers.
- c. Within Lewis and Clark County, the Helena School District #1 is allocated 59.6 percent of the county total; Kessler School District #2 is forecast to receive 4.7 percent; Warren/Darcy School District #3, 9.1 percent; and East Helena School District #9, 26.7 percent.

Mine Operations Workers

- a. During the construction phase of the project, all members of Centennial's construction management team who in-migrate to the area are assumed to locate in Lewis and Clark County where the company maintains its offices.
- b. During each operating phase of the mine, 25 percent of the in-migrating workers are allocated to Jefferson County and 75 percent to Lewis and Clark.
- c. Within Jefferson County, 60 percent of the in-migrants are allocated to the Clancy Elementary School District, 10 percent to the Boulder Elementary District, and 30 percent to Montana City. All in-migrants will be residents of Jefferson High School District #1.
- d. Within Lewis and Clark County, the operating workforce is distributed 59.6 percent to Helena Elementary School District #1; 4.7 percent to Kessler School District #2; 9.1 percent to Warren/Darcy School District #3¹; and 26.7 percent to East Helena School District #9. All in-migrants will be residents of Helena High School District #1.

¹ Warren/Darcy Elementary School District #3 recently was annexed to Helena Elementary School District #1. In-migrants to that area of the Helena valley will be part of the Helena School System.

Assumption #9

The in-migrant population is allocated to high school, municipal and special district jurisdictions as follows:

- a. Jefferson High School District #1: Sum of the Clancy, Boulder and Montana City elementary school district populations.
- b. Helena High School District #1: Sum of the Helena, Kessler, Warren/Darcy, and East Helena elementary school district populations.
- c. Town of Boulder: Equal to Boulder Elementary School District #7.
- d. City of Helena: Equal to 80 percent of Helena Elementary School District #1.
- e. Jefferson County Solid Waste District: Equal to Jefferson County.
- f. Montana City Rural Fire District: Equal to Montana City Elementary School District #27.
- g. Boulder Valley Rural Fire District: No in-migration expected.

Table 3-10 presents an allocation formula for estimating where Montana Tunnels in-migrants are apt to reside by elementary school district. The formula uses an average of four variables including total population, homes for sale, the residence pattern of existing minerals industry employees (i.e., ASARCO), and the residence pattern of Centennial's job applicants. Adjustments were made to the internal allocation of Jefferson County in-migrants to increase the share of workers exported to reside on the county's north end in the Clancy and Montana City school districts. A large portion of the operating work force will be senior management/technical personnel favorably attracted

TABLE 3-10

ALLOCATION FORMULA FOR DISTRIBUTING MONTANA TUNNEL'S IN-MIGRANTS

<u>Jefferson County</u>	<u>Share of Total Population¹</u>	<u>Share of Homes for Sale²</u>	<u>Share Distribution of ASARCO Workforce³</u>	<u>Share Distribution of Centennial⁴ Job Applicants</u>	<u>Average of the Four Variables</u>	<u>Allocation of In-Migrants for Impact Planning Purposes⁵</u>
Clancy Elem. Sch. Dist. #1	3.3%	6.0%	5.1%	6.2%	5.2%	15.0%
Boulder Elem. Sch. Dist. #1	5.0%	2.7%	--	20.1%	7.1%	2.5%
Mt. City Elem. Sch. Dist. #27	1.3%	2.7%	--	1.6%	1.4%	7.5%
Other Jefferson County (primarily Cardwell/Whitehall)	5.7%	--	--	26.4%	8.0%	--
Subtotal	15.3%	11.4%	5.1%	54.3%	21.7%	25.0%
<u>Lewis and Clark County</u>						
Helena Elem. Sch. Dist. #1	61.2%	61.1%	37.7%	26.3%	46.7%	44.7%
Kessler Elem. Sch. Dist. #2	4.1%	7.6%	2.7%	--	3.6%	3.5%
Warren/Darcy Elem. Sch. Dist. #3	10.2%	7.4%	4.5%	6.2%	7.1%	6.8%
East Helena Elem. Sch. Dist. #9	9.2%	12.5%	48.2%	13.2%	20.9%	20.0%
Subtotal	84.7%	88.6%	93.1%	45.7%	78.3%	75.0%

¹Excludes outlying school districts. Total population = 46,931.

²August 1984 listings as reported in the baseline report.

³Employed September 1984.

⁴Applied through end of September 1984 before public information series began.

⁵Set by assumption after reviewing variable presented here, company manpower needs, and location of building sites.

⁶Another 1.8 percent reside outside Jefferson and southern Lewis and Clark counties.

Source: Mountain International, Inc.

to social/cultural amenities offered in Helena. As such, the Boulder area likely will not attract a large number of in-migrant mine operations workers. Clancy and Montana City, both favorably located between the mine and Helena, thus, are assumed to receive a larger share of Jefferson County's in-migrant population.

Assumption #10

The population to employment multiplier for construction workers will be 2.3. That is, every construction job filled by an in-migrant will be associated with 2.3 persons. This multiplier is drawn from the construction worker profile (Mountain West, 1975) and Peacemaker (MX missile) EIS (1984). It assumes that for every 100 in-migrant construction workers, half will be single or unaccompanied by family. The remaining 50 percent will be accompanied by a spouse and an average of 1.6 children. Among the children, 62.5 percent will be school aged.

Assumption #11

The population multiplier for the mine operations workforce will be 3.84. This multiplier assumes that all in-migrants are accompanied by a family. Each household, in turn, consists of two adults, 1.15 school aged children, .51 pre-school children, and .18 other family members (e.g., grandparents, adult children, etc. The 3.84 multiplier was developed by the Montana Department of State Lands (1983, 1985).

Assumption #12

The in-migration of population to a governmental unit does not automatically increase its operating costs. A particular service may have idle capacity that can be used by the in-migrant without necessarily requiring the government to increase its budget.

Assumption #13

Costs are a function of fixed, semi-variable, and variable expenses within the program budget of the service provided. Variable costs are sensitive to changes in population or service

levels while fixed costs are not. The cost analysis for all governmental entities affected by the Montana Tunnels Project will be conducted using a fixed-variable cost structure. Per capita expense measurements which are insensitive to a service system's operating capacity generally will not be used to forecast revenues or expenditures. Additional information regarding the fixed-variable cost structure is contained in the appendix.

Assumption #14

Projections of costs and revenues will be made in nominal dollars, that is, without standardization for inflation. Unless otherwise indicated the analysis assumes that costs will increase at the following rates:

Year	Percent
1985	4.14
1986	4.52
1987	5.08
1988	5.45
1989	5.84
1990	6.26

Inflation estimates were derived from the Office of the Legislative Fiscal Analyst (1984) and Montana Office of Budget and Program Planning (1984).

Assumption #15

The affected local jurisdictions of Jefferson County will receive increased revenues as a result of the Montana Tunnels Project. Potential sources of revenue include:

- a. State school foundation payments for additional elementary and high school students.
- b. Service charges such as water, sewer, or garbage fees paid by in-migrating households and the mine/mill itself.
- c. Property tax payments made by householders on their real and personal property.
- d. Property and gross proceeds tax assessments paid by Centennial Minerals on the value of plant and equipment and the value of metal products produced by the Montana Tunnels mine.

- e. Intergovernmental transfers such as state block grants which are partially based on measurements of population, motor vehicles, etc.

Assumption #16

Future property tax payments will be calculated on the basis of the mine/mill property, gross proceeds of mine production, and the value of new residential property built by in-migrating mine work operations workers. Construction equipment used to build the Montana Tunnels facility will be taxed while present in Jefferson County. At present, the type and value of that equipment is unknown and, therefore, is excluded from the analysis.

Tables 3-11 and 3-12 show the estimated taxable value of the Montana Tunnels facility and the value of its gross proceeds assuming variable metals prices.

Assumption #17

For impact estimation purposes, the worst case revenue scenario will be used. It assumes capital construction in 1984 dollars, depreciation, no capital additions to the plant and equipment and low metals prices. See Table 3-13. Projections of taxable value contained in Tables 3-11 through 3-13 are estimated based on Centennial's conceptual mine plan. The Montana Department of Revenue will assess the property once it is erected and the values represented in the table may change.

Assumption #18

All in-migrating construction workers are assumed to be transient residing either in existing rental units or mobile homes but who will not be present in the area long enough to have property assessed for local property tax purposes.

Assumption #19

In-migrating workers and families who reside in existing housing be it rented or purchased are assumed to have no measurable impact

TABLE 3-11
PROJECT MINE/MILL TAXABLE VALUE

Class IV Property: Taxable Percent = 8.55%	
Taxable Value: 1) Improvements = <u>\$850,371</u>	
Subtotal	\$ 850,371
Class V Property: Taxable Percent = 3.0%	
Taxable Value: 1) Pollution Control	
Equipment = <u>\$128,850</u>	
Subtotal	128,850
Class VII Property: Taxable Percent = 8.0%	
Taxable Value: 1) Power Supply = \$90,648	
2) Distribution = <u>34,882</u>	
Subtotal	125,530
Class VIII Property: Taxable Percent = 11.0%	
Taxable Value: 1) Milling Facilities = <u>\$3,535,831</u>	
Subtotal	3,535,831
Class IX Property: Taxable Percent = 13.0%	
Taxable Value: 1) Furniture and Fixtures = <u>\$10,860</u>	
Subtotal	10,860
Class X Property: Taxable Percent = 16.0%	
Taxable Value: 1) Ore Haulers/Trucks = <u>\$1,269,280</u>	
Subtotal	<u>1,269,280</u>
Total Mine Mill Taxable Value ¹	\$5,920,722

¹ Does not include: 1) taxable value of the construction equipment at the site during the first year of the project; 2) depreciation and/or capital additions in subsequent years; 3) possible "new property" tax classifications (Property Class V) on certain Class IV, VIII, and X property; 4) taxable value of land.

Source: Centennial Minerals Ltd.
Kilborn Engineering Ltd.
Montana Code Annotated
Mountain International, Inc.

TABLE 3-12
PROJECT GROSS PROCEEDS TAXABLE VALUE

Class II Property: Taxable Percent = 3.0%

<u>Ore</u>	<u>Price</u>	<u>Annual Production</u> ¹	<u>Taxable Value</u> ^{2,3}
Gold	\$350/oz.	188 oz.	\$1,974
Silver	\$7.50/oz.	1,430 oz.	322
Zinc	0.49515/lb.	28,593 lbs.	425
Lead	0.30509/lb.	4,189 lbs.	<u>38</u>
Total			\$2,759

<u>Ore</u>	<u>Price</u>	<u>Annual Production</u>	<u>Taxable Value</u> ^{2,3}
Gold	\$300/oz.	188	\$1,692
Silver	\$6.00/oz.	1,430	257
Zinc	0.44/lb.	28,593	377
Lead	0.22/lb.	4,189	<u>28</u>
Total			\$2,354

¹ Rounded to nearest thousand units of production during the first three year of production.

² Thousands of dollars.

³ Taxable value = price * production * 3 percent.

Source: Centennial Minerals Ltd.
Kilborn Engineering Ltd.
Metals Week
Mountain International, Inc.

TABLE 3-13
COMPONENTS OF PROJECT TAXABLE VALUE¹
(Thousands of 1984 \$)

Fiscal Year	Mine/Mill Taxable Value		Gross Proceeds Taxable Value	
	Best Case ²	Worst Case ³	High Case ⁴	Low Case ⁵
1988	\$5,920.7 ⁶	\$5,920.7 ⁶	\$ 0	\$ 0
1989	5,595.1	5,476.7	2,762.4	2,357.5
1990	4,881.6	4,659.6	2,762.4	2,357.5
1991	5,549.4	3,919.5	2,762.4	2,357.5
1992	4,887.1	3,291.9	2,304.8	2,009.5
1993	4,025.0	2,622.9	2,304.8	2,009.5
1994	3,133.1	1,906.5	2,304.8	2,009.5
1995	2,312.8	1,255.2	2,304.8	2,009.5
1996	1,516.1	1,255.2	2,304.8	2,009.5
1997	1,516.1	1,255.2	2,304.8	2,009.5
1998	1,516.1	1,255.2	2,304.8	2,009.5
1999	0	0	2,304.8	2,009.5

¹ Does not include taxable value of project construction equipment or land.

² Includes capital additions and depreciation.

³ Includes depreciation and no capital additions.

⁴ Gold = \$350/oz.; Silver = \$7.50/oz.; Zinc = \$0.49515/lb.; Lead = \$0.30509/lb.

⁵ Gold = \$300/oz.; Silver = \$6.00/oz.; Zinc = \$0.44/lb.; Lead = \$0.22/lb.

⁶ Does not assume new industrial property classification for the mine. If implemented, the new industrial classification would reduce total taxable value to \$1,679,113 plus land in 1988 and it would remain at or below that value until 1991.

Source: Centennial Minerals Ltd.
Kilborn Engineering Ltd.
Montana Code Annotated
Metals Week
Mountain International, Inc.

on the cost of governmental services except schools. Existing housing is currently protected by fire and police services, is attached to water and sewage disposal systems, and is served by solid waste collection system and local transportation network.

Assumption #20

Given the supply of available housing in Jefferson and Lewis and Clark County and past construction trends in the region, it is assumed that 25 percent of the in-migrating mine workers will build new homes while the balance acquires existing structures. New homes will carry an average market value of \$75,000 (Mountain International, 1984; Bureau of the Census, 1980).

PROJECTED POPULATION CHANGE

Using Centennial Minerals proposed manpower requirements for the project, information supplied by job applicants, and the assumptions specified in the preceding section, the project labor force was allocated between Jefferson, Lewis and Clark, and Silver Bow counties. Table 3-14 shows the estimated distribution of all mine operations workers. Job applicants from Silver Bow County generally appeared to have more skills and experience with mine/mill type occupations and, therefore, are expected to make up a proportionately larger share of the total workforce than current residents of either Jefferson or Lewis and Clark counties. It is estimated that approximately half of the locally hired workers will be from Butte-Silver Bow County, with 12.5 percent from Jefferson County and 37.5 percent from Lewis and Clark County. Under the worst case scenario shown in Table 3-14, 20 percent of the total workforce will be in-migrants to the region. In-migrant mine operations workers will range from a low of 13 persons during the construction phase up to 68 persons in the fourth year of mine operation.

Table 3-15 shows the total projected population associated with the in-migrating mine operation's workers. The population is allocated by elementary school district. The in-migrant population will range from 50 persons during the construction period up to 261 people when the mine expands in the fourth year of operation. Lewis and Clark County

TABLE 3-14

LOCAL/NON-LOCAL HIRING RATIO FOR THE MONTANA TUNNELS PROJECT
OPERATING WORKFORCE: WORST CASE

	<u>Worst Case: Total Employment¹</u>		
	<u>Construction Period</u>	<u>Operation Years 1-3</u>	<u>Operation Years 4 Plus</u>
In-migrants	13	46	68
Locally hired	<u>3</u>	<u>186</u>	<u>272</u>
Total employment	16	232	340

	<u>Worst Case: Distribution of Locally Hired Workers</u>		
Jefferson County ²	0	23	34
Lewis & Clark County ³	3	70	102
Butte/Silver Bow County ³	<u>0</u>	<u>93</u>	<u>136</u>
Total locally hired	3	186	272

¹Based on Centennial manpower loading requirements compared with local labor force availability.

²Jefferson County allocated 25 percent share of the Helena labor market.

³Assumes a 50/50 ratio of local workers between the Butte and Helena labor market areas.

Source: Mountain International, Inc.

TABLE 3-15

PROJECTED POPULATION OF IN-MIGRANT MINE
OPERATIONS WORKFORCE: WORST CASE

Total In-Migrant Mine Operations Population: Worst Case

	Construction ¹ <u>Period</u>	Operations ⁴ <u>Years 1-3</u>	Operations <u>Years 4 Plus</u>
Total In-Migrant Employment	13	46	68
Total In-Migrant Population ²	50	177	261

Distribution of In-Migrant Mine Operations Population by County

Jefferson County³

Clancy Elem. Dist. #1	0	27	38
Boulder Elem. Dist. #7	0	4	7
Mt. City Elem. Dist. #27	0	13	20
Subtotal	0	44	65

Lewis and Clark County³

Helena Elem. Dist. #1	29	79	117
Kessler Elem. Dist. #2	3	6	9
Warren/Darcy Elem. Dist. #3 ⁵	5	12	18
East Helena Elem. Dist. #9	13	35	52
Subtotal	50	133	196

¹Worst Case = 80/20 local/non-local hiring ratio.

²Based on MDSL multiplier of 3.84 persons per non-local worker.

³Developers construction management team based in Helena and assigned to Lewis and Clark County.

⁴Based on allocation assumptions shown in Table 3-10. Jefferson County = 25%; Lewis and Clark County = 75%.

⁵The Warren/Darcy district was annexed to Helena District #1 in April 1985.

Source: Mountain International, Inc.

is forecast to receive three-quarters of the new people. In Jefferson County, 90 percent of the in-migrants are expected to reside on the county's north end. The Clancy area is forecast to receive between 27 and 38 persons while Montana City adds from 13 to 20 new residents.

The allocation of the construction workforce is shown in Table 3-16. Again, the workforce is divided between Jefferson and Lewis and Clark counties and distributed by elementary school district. Jefferson County is forecast to receive from 20 to 82 construction workers between the first and fourth quarters of mine/mill development. Lewis and Clark County will receive a similar number. Given Silver Bow's distance from the project site, in-migrating construction or operations workers are not expected to locate there.

Table 3-17 shows the projected in-migrant population expected to accompany the Montana Tunnels construction workforce. During the peak of construction in the fourth quarter a total of 188 persons are forecast to reside in Jefferson County; another 192 are scheduled in Lewis and Clark County. In-migrants to both the Clancy and Boulder elementary school districts are projected to range between 23 and 94 persons with an average of 43 construction worker in-migrants during the 15-month construction period.

Table 3-18 aggregates the projected construction and operations population in one table. In total, the in-migrant population is

TABLE 3-16

ESTIMATED NUMBER AND DISTRIBUTION OF
LOCAL/NONLOCAL CONSTRUCTION WORKERS: WORST CASE

<u>Local/Nonlocal Construction Workers</u>					
	<u>1st Qtr</u>	<u>2nd Qtr</u>	<u>3rd Qtr</u>	<u>4th Qtr</u>	<u>5th Qtr</u>
Total employment	200	210	368	551	208
Locally hired	160 ¹	168 ¹	294 ¹	386 ²	166 ¹
Nonlocal workers	40	42	74	165	42

Distribution of Nonlocal Construction Workers by CountyJefferson County³

Clancy Elem. Dist. #1	10	10	18	41	10
Boulder Elem. Dist. #7	10	11	19	41	11
Subtotal	20	21	37	82	21

Lewis and Clark County

Helena Elem. Dist. #1	12	13	22	49	13
Kessler Elem. Dist. #2	1	1	2	4	1
Warren/Darcy Elem. Dist. #3 ⁴	2	2	3	8	2
East Helena Elem. Dist. #9	5	5	10	22	5
Subtotal	20	21	37	83	21

¹Local/nonlocal hiring ratio of 80/20.²Local/nonlocal hiring ratio of 70/30; three month summer peak period only.³Nonlocal construction workers equally divided between Jefferson and Lewis and Clark Counties. Jefferson County share split equally between Clancy and Boulder elementary school districts. Lewis and Clark County shares per allocation formula on Table 3-10. Helena District #1 = 59.6%; Kessler District #2 = 4.7%; Warren/Darcy District #3 = 9.1%; East Helena District #9 = 26.7%.⁴Warren/Darcy district was annexed to Helena School District #1 in April 1985.

Source: Mountain International, Inc.

TABLE 3-17

PROJECTED POPULATION OF IN-MIGRANT
CONSTRUCTION WORKERS AND FAMILIES: WORST CASE

	<u>Total In-Migrant Workers and Population</u>				
	<u>1st Qtr</u>	<u>2nd Qtr</u>	<u>3rd Qtr</u>	<u>4th Qtr</u>	<u>5th Qtr</u>
Total nonlocal employment	40	42	74	165	62
Total nonlocal in-migrating population ¹	92	96	170	380	143

Distribution of Nonlocal Construction Population by County²

Jefferson County

Clancy Elem. Dist. #1	23	23	41	94	35
Boulder Elem. Dist. #7	23	25	43	94	37
Subtotal	46	48	84	188	72

Lewis and Clark County

Helena Elem. Dist. #1	28	30	51	113	41
Kessler Elem. Dist. #2	2	2	5	9	5
Warren/Darcy Elem. Dist. #3 ³	5	5	7	18	7
East Helena Elem. Dist. #9	11	11	23	52	18
Subtotal	46	48	86	192	71

¹Based on multiplier of 2.3 from Construction Worker Profile (Mountain West, 1975).

²Based on distribution of nonlocal workforce in Table 3-16.

³Warren/Darcy district was annexed to Helena School District #1 in April 1985.

TABLE 3-18

TOTAL PROJECTED CONSTRUCTION AND MINE OPERATIONS
POPULATION BY COUNTY AND SCHOOL DISTRICT: WORST CASE

	Construction Period					Operations Year 1-3	Operations Year 4 Plus
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	5th Qtr		
<u>Jefferson County</u>							
Clancy Elem. Dist. #1	23	23	41	94	35	27	38
Boulder Elem. Dist. #7	23	25	43	94	37	4	7
Mt. City Elem. Dist. #27	0	0	0	0	0	13	20
Subtotal	46	48	84	188	72	44	65
<u>Lewis and Clark County</u>							
Helena Elem. Dist. #1	57	59	80	142	70	79	117
Kessler Elem. Dist. #2	5	5	8	12	8	6	9
Warren Elem. Dist. #3 ²	10	10	12	23	12	12	18
East Helena Elem. Dist. #9	24	24	36	65	31	35	51
Subtotal	96	98	136	242	121	133	196
Total Both Counties	142	146	220	430	193	177	261

¹Compiled from Table 3-17, Projected Population of In-Migrant Construction Workers and Families and Table 3-15, Projected Population of In-Migrant Mine Operations Workforce.

²Warren/Darcy district annexed to Helena School District #1 in April 1985.

Source: Mountain International, Inc.

forecast to range between a low of 142 persons during the first quarter of construction up to a peak of 430 people in the fourth quarter. The average for the 15-month construction period is 226. During the first three years of operation, the in-migrant population is estimated at 177 persons. When the mine expands in the fourth year, the in-migrant group is expected to increase to a total of 261 people of which 65 will reside in Jefferson County and 196 in Lewis and Clark County.

Jefferson County's population is expected to continue increasing even without the development of the Montana Tunnels Project. Between 1970 and 1980, the county added 1,791 new residents, a growth rate of 34.2 percent. Most of the increase was located in the county's north end, a spill over from growth in Helena and southern Lewis and Clark County. That trend is expected to continue albeit at a slower rate than in the 1970's. Table 3-19 shows Jefferson County's population trend between 1970 and 1983 and projections of future population growth to 2000. The projections do not include the possible population effects of the Montana Tunnels Project. The Montana Tunnels Project will be in operation between 1985 and 1997. The population projections contained in the preceeding table (i.e., Table 3-18) can be added to the projected population column of Table 3-19 to determine total county population if the project is opened. It is expected that Montana Tunnels will add up to 188 persons to the county in 1986 during the

TABLE 3-19

HISTORIC AND PROJECTED POPULATION OF JEFFERSON COUNTY
(Excludes Potential Population Growth
Associated with Montana Tunnels Project)

<u>Estimated Actual Population</u>		<u>Projected Future Population</u>	
<u>Year</u>	<u>Population</u>	<u>Year</u>	<u>Population</u>
1983	7,300	2000	8,266
1982	7,300		
1981	7,200	1997	8,086
1980 Census	7,029	1996	8,025
		1995	7,965
1979	7,900	1994	7,915
1978	7,600	1993	7,863
1977	7,100	1992	7,811
1976	6,900	1991	7,760
1975	7,300	1990	7,709
1974	6,900	1989	7,674
1973	6,700	1988	7,639
1972	6,200	1987	7,610
1971	5,600	1986	7,578
1979 Census	5,238	1985	7,544

Source: U.S. Bureau of the Census
Mountain International, Inc.

construction period, or increase total population by 2.5 percent.

During the operation period, mine related population growth will range between 0.6 and 1.0 percent of total county population.

PROJECTIONS AND PLANNING

An inherent characteristic of any planning or impact projection process is its static nature. At some time, the plan or projections must be written down, an act that freezes it in time, all the while the larger world continues to change. The population projections contained in this chapter share that fate. The estimates provided here were developed with information available in the fall and winter of 1984-85. They reflect a reasonable estimation of the effect of the Montana Tunnels Project on the Jefferson County population level and, ultimately, on the demand for governmental services in the county. The projections are subject to change and future events unknown at this date may radically alter their character. Any number of events be they interest rates, fuel supplies, trailer park developments, plant closures and so forth could, for example, affect the numbers of local workers available for employment at Montana Tunnels and/or the supply of housing and other services in Jefferson County.

This plan is not intended to, nor can it, forecast and attempt to account for all of the possible "what ifs" that might occur in the project area and/or possibly influence the local socioeconomic impact of the project. The Hard Rock Impact Mitigation Act specifically includes an amendment process to rectify such problems or to adjust to changes that may occur after the Impact Plan is developed. Likewise,

the developer seeks active community involvement in the socioeconomic monitoring process so that both parties will be well apprised of local conditions as Montana Tunnels is built and operated.

The plan creates a flexible structure to address socioeconomic problems that may be caused by the Montana Tunnels Project and reflects Centennial Minerals' commitment to do so.

SECTION FOUR
PROJECTED SERVICE IMPACTS AND A
PROPOSED PLAN OF MITIGATION

INTRODUCTION

This chapter is divided into nine subsections, each discussing a specific category of service. In turn, each subsection is broken into four parts which provide, respectively:

- A Description of Existing Conditions
- The Potential Impact of the Montana Tunnels Project
- Alternatives for Mitigating Adverse Impact
- Centennial Minerals' Proposed Plan of Action

HOUSING

Preface

Housing is not a service routinely provided by local government and, technically, does not fall under the purview of Montana's Hard Rock Mine Impact Mitigation Act. Nevertheless, the availability of housing is an important factor in determining where immigrants will settle and in what number. The housing pattern, in turn, determines the extent to which governmental services such as water supply, wastewater treatment, law enforcement, and others face increased consumer demands. Efforts to mitigate the adverse impact of population growth associated with industrial development can be facilitated by encouraging the settlement of immigrants in areas where service delivery systems have idle capacity.

Description of Existing Conditions

A description of the housing stock of Montana, Jefferson County, and several of its local jurisdictions is contained in Table 4-1. In Jefferson County, single family residences constituted approximately 72 percent of the year around housing stock, a share slightly above the state's 66 percent average. The town of Boulder has the largest share of multi-family housing units, 17.7 percent, but that type of housing is comparatively uncommon elsewhere in the county. Mobile homes are the second most common form of housing in Boulder (30.8 percent), a circumstance that applies to the Clancy (29.8 percent) and Montana City

TABLE 4-1

HOUSING UNITS, JEFFERSON COUNTY AND MONTANA, 1980

	<u>MONTANA</u>	<u>Jefferson County</u>	<u>Boulder</u>	<u>Clancy/¹ Jefferson City</u>	<u>Montana City/² Alhambra</u>	<u>Rural³ Basin Area</u>
Total housing units	328,465	2,867	534	218	692	370
Total year-around housing	315,015	2,680	532	188	619	274
Number occupied	283,742	2,362	483	178	578	222
Number renter occupied	89,162	482	148	35	45	80
Number vacant	31,273	318	49	10	41	52
Vacancies for rent	11,055	75	21	0	8	19
Vacancies for sale	3,579	44	8	0	5	0
Total year-around housing units by type						
Single family	208,618	1,930	274	132	542	169
Duplex	17,210	106	15	-	13	46
Triplex/four-plex	17,287	64	14	-	0	10
Five or more units	31,124	112	65	-	21	10
Mobile homes	40,776	467	164	56	43	39
Percent of total year around housing units by age						
Pre-1940	30.3%	33.3%	30.1%	44.2%	10.7%	56.2%
1940-1969	39.0%	19.8%	21.1%	19.1%	9.2%	15.7%
1970 and younger	30.7%	46.9%	48.8%	36.7%	80.1%	28.1%
Median value of owner- occupied housing units	\$46,400	\$45,400	\$33,200	\$48,100	\$70,800	\$19,900

¹Enumeration district #932.²Enumeration districts #929, #930, & #931.³Enumeration districts 933, #935, & #936.Source: U.S. Bureau of the Census
Mountain International, Inc.

(6.9 percent) areas as well. Jefferson County has a slightly higher vacancy rate (11.9 percent) than Montana as a whole (9.9 percent) and, proportionately, a larger share of the homes in Boulder (9.2 percent) and the rural Basin area (14.1 percent) were vacant when compared to Clancy (5.3 percent) or Montana City (6.6 percent).

On the whole, Jefferson County has a greater proportion (46.9 percent) of relatively new homes (built since 1970) than does Montana (30.7 percent). Almost fifty percent of Boulder's homes were built during the 1970's as were 80.1 percent of the houses in the Montana City/Alhambra region. The rural area surrounding Basin has the oldest homes and has witnessed the least amount of new home construction (28.7 percent) since 1970. The Clancy area which, for census estimation purposes, extends from Lump Gulch south to Jefferson City, Wickes, and Corbin west of Interstate 15, has a relatively high share of homes built prior to 1940 (44.2 percent) and a smaller number of new homes (36.7 percent) when compared to other areas of the county. The new subdivisions that bound Clancy to the north and east (e.g., Blue Sky Heights, Forest Park Estates, Pinecrest, Gruber Estates) are located in census enumeration districts that have been aggregated and titled the Montana City/Alhambra area (U.S. Bureau of the Census, 1980).

The bottom line on Table 4-1 shows the median value of homes as estimated by the U.S. Census Bureau in 1980. Those numbers should be viewed in relation to one another to identify the relative distribution of high, moderate, and low priced housing in the county and not as an

accurate gauge of housing values. Since 1980, housing values have continued to increase. Jefferson County's higher priced homes are predominately located on the far north end of the county between Clancy and Montana City. The rural Basin area has the lowest housing values, a reflection of the age and obsolescence that characterizes much of the housing stock in that portion of the county. Housing values in and near Clancy and the town of Boulder fall into the moderate price range.

Most of the new homes built in Boulder during the 1970's were small (under 1,000 square feet), modestly priced units sold to persons whose income level qualified them for housing assistance under one of the Farmers Home Administration (FmHA) or Housing and Urban Development (HUD) housing programs. As such, the newness of Boulder's housing does not strongly correlate with higher housing values.

The housing supply of Lewis and Clark County varies from the pattern of neighboring Jefferson County in several significant ways.

Lewis and Clark County had a rapidly expanding economy and a high rate of population growth throughout the 1970's. Even though almost 6,600 new housing units were added during the decade, the supply of homes tended to lag behind demand and housing vacancy rates were well below both Jefferson County's and the state average. Multi-family housing is much more common in Lewis and Clark County (25.7 percent), especially in the City of Helena (39.5 percent) than in either Jefferson County or Montana as a whole. Mobile homes are more common in Jefferson County

(17.4 percent) than in Lewis and Clark (14.0 percent). Unlike the town of Boulder, neither Helena nor East Helena have a significant share (3.9 percent) of mobile homes in their housing supply; mobile homes are almost exclusively confined to the Helena Valley (U.S. Bureau of the Census, 1980). Overall, the homes in Lewis and Clark County tend to be older than those of Jefferson County but newer than homes throughout the state.

The rate of housing development in the City of Helena has slowed considerably since the mid-1970's. The number of residential building permits peaked at 492 units in 1976, and steadily decreased to 62 in 1981. Since then, household construction has increased its tempo but at nowhere near the level of the early and mid-1970's. Through October 1984, the city had issued 95 building permits (Helena Building Department, Annual). There is no count of the number of new homes built outside Helena's corporate limits. Suffice it to say that new housing continues to grow near East Helena and the central and western portions of the Helena Valley.

An inventory of homes and land for sale in the Boulder area, northern Jefferson County and the Helena/Helena Valley was conducted during August 1984. The results of the inventory are presented in Tables 4-2 and 4-3. Table 4-2 shows the number of homes and parcels of land listed for sale with local realtors by school district. The school district boundaries were used as a way of categorizing the properties by geographic location. A total of 527 homes were listed for sale with

TABLE 4-2

HOMES AND LOTS FOR SALE BY SCHOOL DISTRICT
AUGUST 1984 REALTY LISTINGS

	<u>Homes on Lots</u>	<u>Homes with Acreage</u>	<u>Mobile Homes</u>	<u>Lots Less Than One Acre</u>	<u>Lots/Land More Than One Acre</u>
<u>Jefferson County</u>					
Clancy District #1	5	27	--	8	41
Boulder District #7	12	1	1	1	1
Montana City District #27	3	11	--	25	102
Jefferson County Subtotal	20	39	1	34	144
<u>Lewis and Clark County</u>					
Helena District #1	298	21	3	117	48
Kessler District #2	13	25	2	1	37
Warren/Darcy District #3	9	26	4	8	78
East Helena District #9	46	17	3	97	60
Lewis & Clark County Subtotal	366	89	12	223	223
Immediate Project Area Total	386	128	13	257	367

Total Homes = 527

Total Lots = 624

Source: Mountain International, Inc.

TABLE 4-3

SIZE AND ASKING PRICE OF HELENA AREA AND
JEFFERSON COUNTY HOMES, AUGUST 1984

	<u>Average Number of Bedrooms</u>		<u>Average Asking Price</u>	
	<u>Homes on Lots</u>	<u>Homes with Acreage</u>	<u>Homes on Lots</u>	<u>Homes with Acreage</u>
<u>Jefferson County</u>				
Clancy District #1	2.80	3.37	\$67,000	\$86,665
Boulder District #7	2.50	5.00	30,125	NA
Montana City District #27	3.33	3.73	45,000	94,090
<u>Lewis and Clark County</u>				
Helena District #1	3.28	3.52	\$59,765	\$76,665
Kessler District #2	3.15	3.00	58,460	75,800
Warren/Darcy District #3	2.78	3.27	57,780	77,115
East Helena District #9	2.89	3.25	50,325	82,645

Source: Mountain International, Inc.

Helena/Boulder realtors during the month of August. Sixty, or 11.3 percent of the homes were located in Jefferson County; another 467 homes were listed in and around Helena. Almost two-thirds of the Jefferson County homes were being sold with a landholding larger than one acre (i.e., with acreage). The largest number of homes (32) were for sale in the Clancy School District; Boulder and Montana City each had 14 listings. There were 322 homes for sale in the Helena school district and 145 available in the Helena Valley.

The inventory also identified 178 parcels of land available for housing development in Jefferson County, primarily on lots exceeding one acre. In total, 28.5 percent of all 624 parcels for sale in the region were located in Jefferson County. In the Clancy school district, available land was predominantly sized in the five to 20 acre range. In Montana City, most of the land for sale was located in developed subdivisions and the lots were generally from one to five acres in size.

Table 4-3 shows the respective sizes and prices for homes with and without acreage in each of the region's school districts. On the average, the homes in the Clancy school district were more expensive than homes elsewhere in Jefferson County, or, for that matter, in Lewis and Clark County as well. Homes with acreage were larger than those on lots (i.e., less than an acre, usually one quarter of an acre) by about an additional half bedroom.

There were few conventional rentals formally advertised as such in the Boulder area. Local apartment house managers said rentals were "sparse," rarely advertised, and generally refilled rapidly (Dennis Ellis; Zorbel Willitt, pers. comm., October 3 & 4, 1984). A housing survey conducted by the Town of Boulder in February 1985, identified over 100 dwellings (excluding motels and trailer parks) available for immediate occupancy (George Christenson, pers. comm., March 25, 1985).

In Lewis and Clark County, the most expensive "homes-on-lots" (\$59,765) are found in School District #1 which is largely the City of Helena. The most expensive "homes with acreage" (\$82,645) were found in the East Helena school district, an area that includes the eastern portion of the Helena Valley and Canyon Ferry Reservoir. Interviews with representatives of Helena's financial institutions were almost unanimous in their description of the typical Helena area house for sale as "one with three to four bedrooms, selling for about \$70,000" (Flanders; Lindgren; McClain; Bohn; pers. comm., October 31, 1984). The value or, at least, the asking price of Helena area homes is considerably higher than those of central Jefferson County (i.e., Boulder-Basin area), and Silver Bow County to the south. An April 1984 inventory of homes for sale in Butte concluded that the average asking price was \$40,000 or, about 43 percent beneath the Helena market (Western Business, April 1984).

The number of homes for sale contained in Table 4-2 is an underestimate of the actual number of homes being marketed since it does not include

homes offered for sale by the owner. A review of homes "for sale by owner" as listed in the Sunday Helena Independent Record identified a total of 51 individual listings with an advertised asking price of \$68,589. It is probably reasonable to assume that approximately 10 percent of the homes for sale at any given time are not be handled by real estate sales agencies (Cougill, pers. comm., October 31, 1984).

Helena has a large, diversified pool of rental property. The number of rental units decreases as one moves away from the center of Helena out to the Helena Valley and East Helena areas although some four-plex and other forms of multi-family housing have been erected there during the past several years. Throughout 1984 the Independent Record carried an average of 58 listings advertised for rent. Some locations have more than one unit available so the tabulated number can be viewed as the minimum number of rentals. The number of advertised rentals has increased during the past year by about 50 percent. Unfurnished apartments are the most common rental followed by unfurnished homes, and then, furnished apartments.

In addition to rental housing, temporary housing (particularly for short-term construction workers) is frequently found in trailer courts, hotels, and motels. Tables 4-4 through 4-7 contain an inventory of the trailer courts, large apartment buildings, and motels in central and northern Jefferson County and the Helena/Helena Valley. For Jefferson County, the inventory identified ten trailer courts with a total of 160 permanent trailer spaces and 28 temporary, short-term spaces. There

TABLE 4-4

TRAILER COURT INFORMATION, JEFFERSON COUNTY

<u>Trailer Park Name</u>	<u>Total Permanent Spaces</u>	<u>Monthly Rate</u>	<u>Total Temporary Spaces</u>	<u>Rates</u>	<u>General Occupancy</u>	<u>Comments</u>
Mountain Valley Trailer Court,	30	\$60-65	--	--	Completely full last year.	Has temporary construction workers frequently
Sunset Trailer Court, Boulder	43	\$70 \$120 w/showers	17	\$8.50/daily \$30/week \$120/month	Not very full last winter. Several vacancies now	No objections to housing temporary workers
B & F Rentals, Boulder	4	\$50	--	--	1 space available now	Feels that housing is not hard to find in Boulder. Many vacant at low prices
Vishers Trailer Court, Boulder	9	\$60	--	--	Slows down in winter	Welcome workers. Also have 1 rental mobile at \$200/month
Franchi Trailer Court, Boulder	12	\$35	4 mobiles to rent out	\$150/month	One empty trailer space and 2 empty trailers now	No objections to construction workers
O'Neill Trailer Court, Basin	10	\$50 \$65 w/power	4	Haven't been used yet = new	Full now. Usually have 3 or 4 openings	Construction workers keep the business good. Very welcome
Mountain View Trailer Court, Clancy	10	\$45	--	--	2 empty spaces now	-----
Van Dyke's Mobile Home Court, Clancy	12	\$50 \$75 doublewide	--	--	Full all the time Steady business	-----

TABLE 4-4

TRAILER COURT INFORMATION, JEFFERSON COUNTY (CONTINUED)

<u>Trailer Park Name</u>	<u>Total Permanent Spaces</u>	<u>Monthly Rate</u>	<u>Total Temporary Spaces</u>	<u>Rates</u>	<u>General Occupancy</u>	<u>Comments</u>
Alhambra Courts, Clancy	30	\$45-60	May convert a few	--	Pretty steady 2 open now	Have highway workers now. Have hot springs there also.
Whispering Pines, Clancy	--	--	3 mobiles taken out	\$180 \$200 \$250	Rented out now	No lease requirement, but they usually stay for awhile
G & L Campground, Boulder	No information available					

Source: Mountain International, Inc.

TABLE 4-5

MOTEL AND APARTMENT INFORMATION, JEFFERSON COUNTY

	<u>Total Units</u>	<u>Number Units With Kitchensettes</u>	<u>Daily Rates</u>	<u>Weekly Rates</u>	<u>Monthly Rates</u>	<u>Comments</u>
O2 Motel, Boulder	20	17	\$16.50/small \$25/largest	\$73-\$88	No special rate	Will stay open all winter if there is business.
Linn Motel, Boulder	13	13	\$15/single \$20/double	\$70/single \$105/double	No special rate	Some left open for the winter. Never full. Have had construc- tion workers.
Sunshine Health Mine and Motel, Boulder	11	11	\$18/single \$23/double	\$85/single \$95/double	No special rate	Four units left open for winter
Uishers Motel, Boulder	9	9	\$15/single \$22/two double beds	\$105/single \$140 two double beds	\$300/single	Always welcome workers for more business. Tend to stay full in summer. Also have 4 sleeping rooms for \$50/week with no kitchen (in main house).
Big Boulder Apartments, Boulder	40	40	--	--	\$178/effic. \$209/one bdr. \$242/two bdr.	16 units are government sub- sidized, low income, Section 8. Usually packed full in winter.
Lorenz Apartments, Boulder	16	16	\$14/small \$25/2 bdrm.	--	\$250/month	Prefer to rent daily. Usually have more vacancies in the winter. Also have 3 RV hookups and is building 3 more.
Valley Apartments	13	13	--	--	\$125-\$175/ month	40-50% occupancy now.

Source: Mountain International, Inc.

TABLE 4-6

TRAILER COURT INFORMATION, LEWIS AND CLARK COUNTY

<u>Trailer Park Name</u>	<u>Total Permanent Spaces</u>	<u>Monthly Rate</u>	<u>Total Temporary Spaces</u>	<u>Rates</u>	<u>General Occupancy</u>	<u>Comments</u>
Evergreen Court, Helena	36	\$75	--	--	Full right now	Prefers long-term leases
Branding Iron Campground	--	--	86	\$12/daily \$72/weekly \$175/monthly	Summer time - very full	All water cut off Nov. 1. Has access to public water.
McHugh Mobile Home Park	234	\$90	--	--	Full right now	-----
Mountain View Mobile Home Park	84	\$70	--	--	4 spaces available now. Usually fairly full	-----
Prairie Mobile Village	37	\$70-80	--	--	HA	-----
Helena COA Kampground	40	\$65-75	125	\$14.50/daily \$87/weekly \$150/monthly	Occupancy drops in winter	Winter rates are less. Only 20 units have water heated up in winter
Jefferson Trailer Court	9	\$85	--	--	Steady clientele full now	-----
Kim's Marina and Resort	12	\$75	48	\$150/month all hookups	Summer usually requires reservations. Weekends also	Water is shut down in winter. Primarily a resort area
Golden Estates	67	\$85	--	--	One space available now	-----

TABLE 4-f

TRAILER COURT INFORMATION, LEWIS AND CLARK COUNTY (CONTINUED)

<u>Trailer Park Name</u>	<u>Total Permanent Spaces</u>	<u>Monthly Rate</u>	<u>Total Temporary Spaces</u>	<u>Rates</u>	<u>General Occupancy</u>	<u>Comments</u>
VIP Mobile Home Park	4	--	--	\$325- \$365	Full	-----
Yacht Basin Marina	27	\$80-100	5	\$70/week	Permanent spaces fill	Temporary set-ups good for summer only
Wimmer Trailer Court	5	\$60	--	--	Full today	-----
Van's Trailer Court	20	\$65	--	--	One opening now Fairly full always	-----
T & L Park	11	--	--	\$235/3 bdr. \$225/2 bdr.	Full, but sometimes has large vacancies	-----
Sun's Garden	12	\$75- \$85	--	--	Full right now	-----
Silver Creek Mobile Home Park	22	\$60	--	\$50- \$250	Full today	-----
Russel Trailer Court	6	\$75	--	--	Full, winters also full	-----
Pleasant View Trailer Court	24	\$60	--	--	Full now	-----
Meadowlark Trailer Court	21	\$60	--	--	Completely full	Thinking of expanding her operation

TABLE 4-6

TRAILER COURT INFORMATION, LEWIS AND CLARK COUNTY (CONTINUED)

<u>Trailer Park Name</u>	<u>Total Permanent Spaces</u>	<u>Monthly Rate</u>	<u>Total Temporary Spaces</u>	<u>Rates</u>	<u>General Occupancy</u>	<u>Comments</u>
Jack's Trailer Park	12	\$75	--	--	Full now because many trailer courts have closed down	-----
Hidden Valley Trailer Court	9	--	--	\$225 to \$300	Full all the time	Located behind East Helena smelter
JD Trailer Court	5	?	--	--	Full today	-----
Golden Acres	8	\$75	--	--	Full now - located on 1-1/2 acres Hice site	Will be adding on spaces
Eschenburg Trailer Court	3	\$80	--	--	Occupied now	Requires 6 month lease.
E & B Trailer Court	10	\$55	--	--	2 empty now. Not as full in winter	-----
Brentwood Court Permit for 64 only 2 finished		\$50	--	--	Not applicable - new court	Thinking of developing more in an undeveloped area. How unsurfaced roads
Rose's Trailer Court	14	\$75	--	\$225 furnished	1 vacant space usually full even through winter	-----
Western Trailer Court	55	\$80	2	\$65 month	Only 2/3 occupied at most times	-----

TABLE 4-6

TRAILER COURT INFORMATION, LEWIS AND CLARK COUNTY (CONTINUED)

Trailer Park Name	Total Permanent Spaces	Monthly Rate	Total Temporary Spaces	Rates	General Occupancy	Comments
McDonald Trailer Court	20	\$60	6	\$6/night	Full, many retired	Have one for sale. Have housed construction workers
Stilsbee Park	9	\$85	--	--	Full most of the time	-----
McGee Trailer Court	2	\$65	--	--	Rented now	-----
Leisure Village Mobile Home Park	55	\$80-\$85	--	--	Fairly full	-----
Abneys Mobile Park	No information available					
Beacon Mobile Home Park	No information available					
Cactus Flats Trailer Park	No information available					
Hamilton Trailer Court	No information available					
Lucky Seven	No information available					
Nineteen Hundred	No information available					
Trailer Court	No information available					
Pebble Gardens	No information available					
Reynolds Mobile	No information available					
City Home Park	No information available					
Saeman Trailer Court	No information available					
Skinner Trailer Court	No information available					

Source: Mountain International, Inc.

TABLE 4-7

HOTEL/HOTEL INFORMATION, LEWIS AND CLARK COUNTY

	Total Units	Number Units With Kitchensettes	Daily Rates	Weekly Rates	Monthly Rates	Comments
Kozy Motel, Helena	12	7	\$18/single \$23/double	--	Will go down to \$17/night	Keep fairly full with workers at all times. No objections to construction workers.
Lamplighter Motel, Helena	12	9	\$20/single \$28/double \$24/single with kitchen	--	No special rate	Open all year and always full with construction workers.
Iron Front Hotel, Helena	39	--	\$10/single \$12/double	\$50/single \$65/double	\$190/single \$210/double	Located downtown, often have construction workers. Plenty of space available. Community bathrooms.
Knight's Rest, Helena	9	5	\$17/single \$24/double \$24/single w/kitchen	Will drop off \$2/night	Will drop off \$2/night	Prefer construction workers at all times. They're quiet and consistent. Housing railroad workers now.
Red Roof Motel, Helena	7	1	\$15/single \$20/double	\$70/single	Would negotiate monthly	Also have a cafe there. Open from 7-3, Monday - Friday.
Park Hotel, Helena	22	--	\$10-12/single \$13-15/double	\$50-60/single \$60-75/double	No special rate	Higher rates for private baths. Most people are overnight guests but no objections to single workers.
Evergreen Motel, East Helena	6	2	\$16/single \$18/double	\$75/single \$80/double \$85 w/kitchen	No special rate	2 rooms in each unit - open all season but never full. Have had construction workers

Source: Mountain International, Inc.

are not a large number of vacancies at present. Boulder area trailer courts reported more variation in their occupancy pattern than did the courts on the county's north end. Construction workers were uniformly welcomed.

Boulder has four motels with 53 rental units and two apartment buildings with 56 rentals. The motels reported low occupancy rates in the winter while the apartments described the opposite condition.

In Lewis and Clark County, the inventory identified 41 trailer parks of which 31, with 820 total units, participated in the survey. There were 272 temporary trailer spaces located in six courts (campgrounds) as well. A number of the courts reported stable occupancy levels with trailer spaces turning over slowly, one or two at a time. The campgrounds with the temporary spaces primarily cater to the summer tourist traffic and shutdown large parts of the operation during the winter.

The list of hotels/motels in Helena and East Helena contained in Table 4-7 are those that frequently house temporary workers visiting the region. Collectively, they have 107 units including 24 with kitchenettes. Rental rates are available by day, week, and the month.

The Potential Impact of the Montana Tunnels Project

The demand for both temporary and permanent housing caused by in-migrating workers associated with the Montana Tunnels Project is

very small. In Jefferson County, the maximum projected need for housing ranges between 20 and 82 units during the construction period and from 12 to 17 homes during operations. Some construction workers will bring trailers with them and will not require conventional housing. In Lewis and Clark County, the maximum projected demand for housing during the construction period ranges from 20 to 83 units; during operations it will decline to a need for 34 to 51 homes.

Given the supply of trailer spaces, motels, apartments, and homes for sale or rent, the two counties possess adequate capacity to absorb both the in-migrating construction workforce and mine operations crew without difficulty. It will not be necessary to erect either temporary or permanent housing to accommodate in-migrating Montana Tunnels Project employees and their families.

It is possible that a commercial or residential property developer may seek to capitalize upon the small, new market for housing created by immigrant mine/construction workers by developing a residential subdivision or trailer park in northern Jefferson County. Such steps, if taken, will be done at the developers own initiative and without either the encouragement or approval of Centennial Minerals. Centennial does not see a need for additional housing development of any type to house workers employed at the Montana Tunnels Project.

It is recognized that individual workers, particularly those on the mine's operating staff, may choose to build new rather than buy

existing homes. Likewise over time, it is possible that some workers residing in Lewis and Clark or Silver Bow County may make a personal decision to relocate nearer the mine/mill site in either central or northern Jefferson County. That process is not expected to occur immediately or rapidly. Households do not initially locate nor shift to new residences simply on the basis of proximity to one's place of employment. There is, as well, a \$30-35,000 difference in the price of housing between Helena and Butte. Relatively few individuals from the latter community will be willing or able to absorb such a financial loss in order to reduce their commuting time by residing in northern Jefferson County. There will not be a significant number of Butte-Silver Bow employees moving to Jefferson County, particularly northern Jefferson County, as a result of employment at Montana Tunnels.

Alternatives for Mitigating Adverse Impact

No adverse impact on housing is expected as a result of the Montana Tunnels Project. The local, private housing market has the capacity to absorb potential in-migrants and local builders have the resources to easily supply individual requests for new homes. Therefore, no alternatives for mitigating adverse impact are necessary.

Centennial Minerals' Proposed Plan of Action

Centennial proposes to:

1. Allow individual employee households to seek and select housing commensurate with their own needs, desires, and resources.

2. Allow the private housing market to respond to and accommodate the small demand for housing Montana Tunnels will generate, including the provision of new dwellings, as personally requested by company employees.

Through the monitoring process, Centennial Minerals will track the residency pattern of the project's employees. Should subsequent events indicate that the local, free enterprise housing market is either unable to cope with employee housing requirements, or if the distribution of immigrant employees has started to adversely impact governmental service delivery, the company will take action to correct such problems, including, if necessary, amending the impact plan.

EMPLOYEE TRANSPORTATION AND HIGHWAY TRAFFIC

Preface

Employee transportation is not a service covered by the Hard Rock Mine Impact Mitigation Act (HB 718). It is discussed here because, like housing, its structure and availability can contribute to the employee's residential preferences and, hence, potential adverse impacts on governmental services. Traffic, in itself, does not fall directly under the purview of HB 718. It can, however, affect local government, road maintenance, law enforcement, and emergency medical services. This section will describe potential traffic levels; other service specific sections will describe its amelioration.

Description of Existing Conditions

There is no system of public transportation in Jefferson, Lewis and Clark, or Silver Bow County that can be used by the mine/mill employees to travel to work. In the absence of specific steps to create alternative means of transportation, workers will commute to work solely by private vehicle. Workers from all areas except the immediate Jefferson City area will travel to the mine site via Interstate 15 (I-15) to Jefferson City and by county road to the actual plant site. Employees from the Whitehall-Cardwell area will use State Route 69 between their homes and Boulder, where the road junctions with I-15. Figure 2-2, presented previously, shows the main transportation routes in Jefferson and Lewis and Clark counties.

The Montana Department of Highways is responsible for the construction and maintenance of the state's interstate (FAI), primary (FAP), and secondary (FAS) roads. Periodically, the state inspects all of the primary and secondary roads and assigns them a sufficiency rating to measure their structural soundness, safety, and capacity. A rating of 100 reflects a highway with a thoroughly sound structure, free of hazards, and capable of handling existing traffic demands. Lower scores reflect the condition of roads deficient in one or more of the rating criteria. When last inspected in 1982, the sections of I-15 in Jefferson County between Basin and Helena had an average sufficiency rating ranging between 81 and 92 with 3.8 miles classified as deficient. South of Basin, an 8.7 mile stretch of two-lane road built in 1933 had a sufficiency rating of 44. That section is being totally reconstructed, and, when completed in 1986, the highway will be a four-lane road for its entire distance in Jefferson County. The completed Interstate received uniformly high marks in foundation soundness, drainage, surface condition, safety, and its ability to accomodate existing traffic levels. In the summer of 1984 the road also was resurfaced from Jefferson City north to near the Sieben interchange, about 25 miles north of Helena. By the time construction starts on the Montana Tunnels Project, a four-lane highway in excellent condition will be in place connecting each of the major employee origination zones (e.g., Helena, Butte, northern and central Jefferson County) with the main access road to the mine through Jefferson City.

Highway 69, a two-lane roadway from Boulder to Cardwell and Whitehall, had a 1981 average sufficiency rating of 54.0 and 15.6 miles (41.1 percent) classified as deficient. Approximately 39.4 percent of the primary highway system (2,158 miles) statewide was rated deficient in 1981. Highway 69 is in average condition for a road of its construction and age.

Table 4-8 summarizes average daily vehicle counts on Jefferson County's main highways from 1970 to 1983. The highest volume of traffic is found on I-15 between Clancy and Helena. Just south of Helena's Prospect Avenue interchange, the average daily traffic count was 4,630 vehicles, an increase of 31.2 percent over its 1980 level. Near Clancy, the highway averages 2,910 vehicles per day, and, south of Boulder, 1,260 vehicles. Between Butte and Basin, I-15 has carried an average of 1,370 vehicles per day during the past five years. The traffic volume is slightly less near Butte. At the crest of the Woodville Hill, just north of Butte, I-15 carries around 1,300 vehicles per day. The traffic volume on Highway 69 is considerably lower than on I-15. Six miles south of Boulder, Highway 69 has carried an average of 620 vehicles per day since 1980, with little variation from year to year. Near Cardwell, Highway 69's traffic volume has increased during the past three years from 550 to 820 vehicles per day. The likely cause of the increase was the opening of the Golden Sunlight Mine near the highway's intersection with I-90. Three years ago, the last time a traffic count was made on the Corbin-Wicks Road, the traffic volume was measured at 86 vehicles per day (Robert Peccia and Associates, 1983).

TABLE 4-8

TRAFFIC COUNT AT SELECTED JEFFERSON COUNTY SITES
(AVERAGE PER DAY), 1970, 1975, AND 1980-1983

<u>Year</u>	<u>Site #1¹</u>	<u>Site #2²</u>	<u>Site #3³</u>	<u>Site #4⁴</u>	<u>Site #5⁵</u>	<u>Site #6⁶</u>	<u>Site #7⁷</u>
1983	4,630	2,910	1,260	620	820	1,250	1,260
1982	4,060	3,640	1,460	600	660	1,330	NA
1981	4,740	3,000	1,650	630	560	1,530	NA
1980	3,530	2,490	1,570	630	NA	1,430	1,350
1975	3,400	2,180	1,440	430	460	1,310	NA
1970	NA	1,740	NA	360	370	NA	1,190

- ¹Site #1: Interstate 15, one-half mile south of capital interchange.
²Site #2: Interstate 15, one mile north of Clancy.
³Site #3: Interstate 15, three-quarters of a mile south of Boulder interchange.
⁴Site #4: State Route 69, approximately six miles south of Boulder.
⁵Site #5: State Route 69, two and one-half miles north of Cardwell and one mile north of junction with Secondary 359.
⁶Site #6: Interstate 15, south end of Elk Road.
⁷Site #7: Interstate 15, as junction with Boulder River Road.

Source: Montana Department of Highways
Mountain International, Inc.

The Potential Impact of the Montana Tunnels Project

Montana Tunnels will increase traffic levels on I-15 north and south of Jefferson City and on the county road connecting Jefferson City, Corbin, Wicks, and the mine site. Centennial has committed itself to a policy of prohibiting access to the mine/mill site by employees and vendors via the Clancy Creek Road unless the Corbin-Wicks Road is blocked to traffic. The decision to forego the use of the Clancy Creek Road is intended to prevent mine related traffic from posing a nuisance and/or hazard in the Clancy area and, particularly by the Clancy School. Likewise, trucks hauling ore concentrates, building materials, and/or mining equipment between the mine site and railroad load/unload facilities in Helena or East Helena will travel to their destinations via I-15 and U.S. Highway 12. It shall be Centennial's policy not to use State Route 518 between the Montana City exit and East Helena and passing the Montana City School, for concentrate shipment.

Vehicle traffic caused by the development and operations of the Montana Tunnels Project will be of three types, including:

1. Commuting Employees: The amount of traffic generated by this source is a function of the gross number of employees at the project site and the extent to which they share rides or otherwise aggregate themselves for commuting purposes. The distribution of employee commuters by time of day depends upon the facility's operating schedule (i.e., number and timing of shifts).
2. Supply/Material Transport: This source of traffic will be greatest during the construction phase when building materials and equipment are hauled to the project site. Once operational, the mine/mill periodically will receive shipments of materials used in ore processing and for

maintenance. This type of traffic will occur almost exclusively on weekdays during the day shift.

3. Concentrate Shipment: Montana Tunnels will produce lead and zinc concentrates that will be hauled to Helena/East Helena for railroad shipment to market. All zinc concentrates will be sold to a smelter outside Montana; the lead may be used at the East Helena Smelter. Concentrate shipment from the mine will occur five days per week on day shift using standard highway size dump trucks.

During the construction period, it is anticipated that work will be scheduled five days per week, one shift (day) per day during the first, second, and fifth quarters. In the third and fourth quarters, when most of the structural and equipment installation is scheduled, work will proceed on a two shift (days: afternoons), seven days per week, basis. A small security staff will be on site 24 hours per day, seven days per week, throughout the construction period. See Table 4-9.

When operational, the mine will operate seven days per week on a two shift basis. The mill will run three shifts per day, seven days per week. The company's administrative offices, will be open five days per week on day shift only. Table 4-9 shows the estimated manpower loading by day-of-week and shift for the construction and operating workforces. Half of Centennial's construction management team of 16 workers are included in the construction phase of the project. The company will maintain its offices in Helena until the mine/mill is completed, but staff will travel to the project site on a daily basis throughout its development. The weekday, day shift will have the largest workforce. During the construction period, the day shift crew is projected to

TABLE 4-9

CONSTRUCTION AND MINE OPERATIONS MANPOWER
LOADING BY DAY-OF-WEEK AND SHIFT

<u>Construction Crew</u>	<u>Construction Phase</u>				
	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>5th Quarter</u>
Monday - Friday day shift	194	204	208	224	202
Saturday - Sunday day shift	2	2	79	163	2
Afternoon shift (7 days/week)	2	2	79	162	2
Night shift (7 days/week)	2	2	2	2	2
<u>Centennial's</u>					
<u>Construction Management</u>					
Monday - Friday day shift	8	8	8	8	8
Saturday - Sunday day shift	0	0	1	1	0
Afternoon shift (7 days/week)	0	0	1	1	0
<u>Mine Operations Phase</u>					
<u>Day of Week/Shift</u>	<u>Operation¹</u>				<u>Operation¹</u>
	<u>Years 1 - 3</u>				<u>Years 4 Plus</u>
Monday - Friday day shift	132				182
Saturday - Sunday day shift	54				103
Afternoon shift (7 days/week)	27				48
Night shift (7 days/week)	26				47

¹ Includes estimated overtime.

Source: Kilborn Engineers
Centennial Minerals, Inc.
Mountain International, Inc.

range between 194 and 224 workers. During mine operations, the weekday, day shift will have an estimated 132 employees during the first three years, increasing to 182 workers in the fourth year.

Table 4-10 shows a forecast of traffic volume for the construction period. The forecast separates traffic by point of origin north and south of Jefferson City. North of Jefferson City, I-15 is projected to experience a traffic increase ranging between 123 and 336 vehicles per day and averaging 185 vehicles, assuming no action is taken to pool commuters or otherwise reduce traffic levels. A similar traffic volume is expected from central Jefferson County and the Butte-Silver Bow area south of Jefferson City. Interstate-15 is projected to receive an increase of from 90 to 236 vehicles per day with an average of 136 vehicles if no action is taken to reduce traffic levels. At Jefferson City the two traffic streams will merge and use the Corbin-Wickes county road to reach the mine site. The total traffic forecast for the road ranges from 213 to 572 vehicles per day with peak activity occurring during the 90-day, fourth quarter of construction. The Corbin-Wickes Road will experience an average traffic increase of 321 vehicles per day.

The traffic estimates described here are for one-way vehicle trips which counts each car or truck twice; once going to the mine site and again, when it returns from the project. Thus, a traffic estimate of 90 vehicle per day is, in actuality, 45 cars/trucks, each making two trips.

TABLE 4-10

ORIGINATION ZONES AND PROJECTED DAILY
CONSTRUCTION PERIOD VEHICLE TRAFFIC

	<u>Number of Commuters</u>				
	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>5th Quarter</u>
<u>Points South</u>					
Butte area commuters	80	84	147	193	83
Central Jefferson County commuters	20	22	38	66	22
Subtotal	100	106	185	259	105
<u>Points North</u>					
Helena area commuters ¹	88	92	157	237	91
Northern Jefferson County commuters	20	20	36	65	20
Subtotal	108	112	193	302	111
<u>Estimated Traffic Volume^{1,2}</u>					
<u>Points South</u>					
Butte area commuters	57	60	105	138	59
Central Jefferson County commuters	29	31	54	94	31
Truck haulage	4	4	4	4	4
Subtotal	90	95	163	236	94

TABLE 4-10

ORIGINATION ZONES AND PROJECTED DAILY
CONSTRUCTION PERIOD VEHICLE TRAFFIC (CONTINUED)

Points North	Estimated Traffic Volume ^{1,2}				
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	5th Quarter
Helena area commuters	88	92	157	237	91
Northern Jefferson County commuters	29	29	51	93	29
Truck haulage	6	6	6	6	6
Subtotal	123	127	214	336	126
Total Traffic	213	222	377	572	220

¹ Includes Centennial construction management team of eight persons in 1st, 2nd, and 5th quarters and 10 persons during 3rd and 4th quarters.

² Based on 1.4 persons per vehicle for local, short distance commuting (i.e., Jefferson County); 2.0 persons per vehicle for intermediate hauls (i.e., Helena-Lewis & Clark County); and 2.8 persons per vehicle for long distance commuters (i.e., Butte).

Source: Clete Daily and Associates
Montana Department of State Lands
Mountain International, Inc.

During the first, second, and fifth quarters of construction, virtually all vehicle movement will occur during the day just prior to and following the work shift between 6:30-8:00 a.m. and 3:30-5:00 p.m., respectively. In the third and fourth quarters the traffic level will be spread out over a longer period during the day since two construction crews will be on duty on a back-to-back schedule. The weekday, 6:30-8:00 a.m. traffic peak of about 100 to 120 vehicles will remain about the same during all five quarters of construction. A similar number will depart from the plant site in the late afternoon. During the third and fourth quarters between 42 and 87 more vehicles will travel to the mine site in early afternoon (1:30-3:00 p.m.) in preparation for the afternoon shift and will depart in late evening (10:00-11:30 p.m.) when the shift is completed.

Employee commuter traffic will be augmented by trucks hauling supplies and materials to the project site. Such vehicles will vary in size but all will be licensed highway vehicles probably of 120,000 pounds or less, that is, with capacities of 25 to 30 tons. There is no way of accurately forecasting the number of truck trips that may be necessary to haul materials and equipment to the project site and, as such, the traffic estimate shown on Table 4-10 is by assumption. The daily commuter vehicle estimate has been increased by ten vehicle trips per day as a truck haulage factor of five vehicle loads delivered to the plant site for the length of the construction period. Practically speaking, the number of truck trips likely will not be evenly distributed and, instead, be more frequent during the third and fourth

quarters, and less common at other times. Truck traffic will occur almost exclusively during the day shift on weekdays.

The projected average increase in traffic on I-15 during the construction period between Jefferson City and Helena is equal to between 4.0 and 6.4 percent of the existing traffic volume, depending upon the measurement point. The increase will be greater near Clancy (i.e., 6.4 percent), where the existing traffic level is somewhat lower. Between Jefferson City and Butte, the projected average increase in traffic volume is equal to about 10.8 percent of existing traffic levels.

Table 4-11 shows the projected level of vehicle traffic when the mine is operational. Traffic totals by shift were derived by allocating the operations manpower among the three counties pursuant to the assumptions outlined in the previous chapter. Forty percent of the total workforce is expected to be from the Butte-Silver Bow area.

During the first three years of operation, the weekday total vehicle count is estimated at 201 one-way vehicle trips per day. Of that amount, 88 percent will be employee commuter traffic and the remainder truck traffic, principally the transport of ore concentrate to East Helena. Interstate 15 north of Jefferson City will receive 130 additional vehicle trips per day or 64.6 percent of total weekday vehicle traffic. The traffic level south of Jefferson City is forecast to be 71 vehicles per weekday. The weekday estimates are for a 24-hour

TABLE 4-11

ORIGINATOR ZONES AND PROJECTED DAILY VEHICLE
TRAFFIC DURING OPERATIONS BY DAY-OF-WEEK AND SHIFT

	<u>Butte Area</u>	<u>Operation Years 1-3</u>			<u>Commuter Total</u>	<u>Concentrate Transport</u>	<u>Total Vehicle Trips</u>
		<u>Central Jefferson County</u>	<u>Helena Area</u>	<u>Northern Jefferson County</u>			
Monday - Friday day shift	38	11	59	17	125	24	149
Saturday - Sunday day shift	16	4	24	7	51	0	51
Saturday - Sunday afternoon shift	8	3	12	3	26	0	26
Saturday - Sunday night shift	8	3	12	3	26	0	26
Total weekdays (24 hours)	54	17	83	23	177	24	201
Total weekends (24 hours)	32	10	48	13	103	0	103
<u>Operation Years 4 Plus</u>							
Monday - Friday day shift	52	16	82	23	173	24	197
Saturday - Sunday day shift	29	9	47	13	98	0	98
Saturday - Sunday afternoon shift	14	4	22	6	46	0	46
Saturday-Sunday night shift	14	4	21	6	45	0	45
Total weekdays (24 hours)	80	24	125	58	265	24	288
Total weekends (24 hours)	57	17	90	25	189	0	189

Source: Mountain International, Inc.

period, all three operating shifts, although the day shift accounts for about 75 percent of the total. On weekends, the traffic level falls by about half to 103 vehicle trips per day, spread out over a 24 hour period.

Starting in year four, when the mine expands its workforce, the daily traffic level is expected to increase about 43 percent on weekdays to 288 vehicle trips per day, and 83 percent, to 189 vehicle trips per day, on weekends. In the fourth year, when mine operations traffic will peak, the weekday traffic volume will about equal about 7.1 and 8.2 percent of existing traffic levels near Clancy and in Elk Park, respectively.

Alternatives for Mitigating Adverse Impact

There are four basic approaches that can be employed to reduce mine related traffic accidents.

1. Bus Service: This option requires the company or a private vender to institute bus transportation for employees. Travel by bus is generally less convenient than travel by car. To be successful, the cost usually has to be subsidized. Bus service, per se, likely will not work in the case of the Montana Tunnels Project, except during the construction period. The operating work crews assigned to each shift are too small and will be too widely dispersed to generate sufficient ridership.
2. Van Pooling/Travel Cooperatives: This option is a miniature bus service. Typically, the vehicle is provided by the employer with the cost of maintenance and operation paid by the employees. Vehicles carry six to 12 passengers. A related concept is the travel cooperative where each worker buys a share of the vehicle (bus, van, car) which guarantees a seat and then contributes so much each month for operations.

3. Paid Travel Time and/or Mileage: Under this option the employee receives a travel allowance. Depending upon how it is constructed, the employee may be compensated at a flat rate on a sliding scale per unit of distance. One Montana mining company allows its commuting employees to purchase motor fuel at cost from the company's bulk gasoline supply.
4. Drive, Park, and Pool: This option involves workers driving to a central location, parking their private vehicles and either car pooling, taking a bus, or riding a van to the plant site. This option can be used in combination with long distance bus or van service or for short hauls.

Centennial Minerals' Proposed Plan of Action

Centennial Minerals proposes a two-step plan to encourage commuting employees to pool resources and reduce the volume of mine-related traffic during both the construction and operating phases of the project.

1. Centennial Minerals' will monitor employee participation and interest in car and van pools. The company will encourage ride sharing arrangements. If there is sufficient employee interest, the company may implement one or more van pools or promote car pools for long distance commuters, provided such steps can be taken on a cost effective basis.
2. During the construction period, an assessment will be made to determine the feasibility of providing bus transportation from major origination zones such as Butte and/or Helena. If such a step appears feasible, it will be given a pilot test. Full implementation will depend on ridership commitments and the service's ability to operate efficiently.

Other actions may be undertaken to reduce traffic levels if there is sufficient employee interest in such programs. As a general policy, however, the company will neither sponsor nor subsidize mass transportation unless the service can be supplied as, at least, a break-even financial proposition.

LOCAL STREETS AND ROADS

Description of Existing Conditions

The Montana Tunnels Project site is located about four miles southwest of I-15 at Jefferson City. The project site is accessible only by county road. Four different roads can be used to reach the property, although one route through Finn Gulch and Amazon Creek south of Wickes is open only during the summer. The county roads are:

1. Clancy Creek Road: The road starts at the Clancy interchange with I-15, travels through the community, passes the Clancy School, and follows the Clancy Creek drainage for about ten miles to the ruins of the Mina and Washington mines immediately west of the Montana Tunnels site.
2. Jefferson City-Gregory Mountain Road: The road starts at the Jefferson City interchange with I-15 and travels two miles southwest to the hamlet of Corbin. At Corbin, the road divides with the south fork passing on to Wickes while the north fork climbs the gulch separating Alta and Gregory mountains. At the head of the gulch, the road is near the north boundary of the project site.
3. Corbin-Wickes Road: The road is the southern extension of the road that starts at Jefferson City. From Corbin, it follows Spring Creek for about three miles to Wickes, turns west across Chute Creek, and climbs up-slope to the Montana Tunnels property.
4. Amazon-Wickes Road: The road starts from a frontage road in the Boulder Valley about two and one-half miles north of Boulder. The road climbs the south slope of the Boulder Hill near the old Amazon Mine and descends into Wickes through Finn Gulch. From there, access to the Montana Tunnels site is possible through Chute Creek, due west of Wickes, or by traveling on to Corbin and climbing Gregory Mountain.

Each of the county roads listed above is of dirt or gravel construction. There are a few occupied residences located along the

Clancy Creek and Wickes-Corbin roads and both routes are used year-around. The Amazon-Wickes Road and a section of the road west of Corbin up Gregory Mountain are not plowed and are closed during the winter. In addition, each of the roads has one or more problems that limit its usefulness as an access corridor for the project, as follows:

<u>Road</u>	<u>Problems</u>
Clancy Creek Road	<ul style="list-style-type: none"> - Traverses a relatively populated area and is next to a school. Traffic a potential nuisance and hazard. - Narrow right-of-way, fair number of curves and poor visibility. - Long and time consuming route to mine site.
Jefferson City-Gregory Mountain Road	<ul style="list-style-type: none"> - Passes through Jefferson City and Corbin. - Right-of-way west of Corbin is very narrow. The road grade is steep and road bed is in poor condition.
Corbin-Wickes Road	<ul style="list-style-type: none"> - Passes through Wickes near several residences. - Road north of Wickes crosses area selected as the preferred tailings disposal site.
Amazon-Wickes Road	<ul style="list-style-type: none"> - Narrow right-of-way, numerous curves, poor visibility. - Road bed in poor condition, unsuitable for traffic without major repairs. - Long and time consuming route to mine site.

None of the roads listed above currently is built to withstand high traffic volumes or the kind of heavy truck traffic that would occur during mine construction. Each develops a dusty, washboard surface in the summer and needs periodic grading. Each is susceptible to frost heaving, potholes, or muddy patches, particularly following the spring thaw or a heavy rain. In their current condition, none of the roads is a suitable access route to the mine. Accordingly, Centennial Minerals is planning to up-grade a portion of the existing road and build a new section of road between Jefferson City and the project site.

The Potential Impact of the Montana Tunnels Project

The Montana Tunnels Project will increase the volume of traffic on the Corbin-Wickes Road, the one selected as the project's primary access route. As indicated in the previous section, the projected traffic level during the construction period will be two to five and a half times greater than existing traffic travels on the Corbin-Wickes Road. The traffic projections assume a limited amount of car pooling and no mass transportation of project employees. If implemented, either or both actions could substantially reduce the traffic levels projected here.

Also, the access road will experience heavy truck traffic on a regular basis. At present, logging trucks and other heavy vehicles occasionally use the county roads in the region, but at nowhere near the level anticipated with the development of Montana Tunnels. The increased traffic will cause the road surface to deteriorate more

rapidly than is currently the case. In turn, maintenance costs can be expected to increase. Also, depending upon the timing and sequencing of work crews and shifts, short-term (i.e., less than 15 minutes) traffic bottlenecks and delays may occur at the I-15 interchange, in Jefferson City, and near the plant site gate.

Alternatives for Mitigating Adverse Impact

There are three major methods of mitigating the potential adverse impact of the project on county roads, including:

1. Stagger construction and operating shifts to minimize the number of vehicles attempting to enter or leave the plant site at any one time. This action will reduce potential traffic congestion and some hazardous driving conditions but will lengthen the amount of time during the day in which a given area experiences increased levels of traffic.
2. Traffic can be distributed among the various county roads, perhaps reserving one for trucks and using the others for commuter traffic. This approach will limit the amount of traffic and deterioration a given road may experience, but it also will spread the traffic impact over a wider area and potentially with far greater maintenance costs.
3. Mine traffic can be concentrated on a single road that has been up-graded to meet the demands placed upon it.

Centennial Minerals' Proposed Plan of Action

Centennial proposes to adopt alternative number 3 above, concentrating mine traffic on an up-graded road as the primary means of mitigating adverse road impacts. It may also adopt a staggered work schedule during all or parts of the construction period. That step will be determined after consultation with the project contractor and review by the Montana Tunnels Monitoring Committee.

Centennial also is proposing to close part of the existing road network west of Wickes in the proposed tailing impoundment site and replace it with a new section of road. The new road will start about midway between Corbin and Wickes on the Centennial Ranch, formerly owned by the Munsons, climb the east and south sides of Alta Mountain to the mine site, and go on to join the Clancy Creek Road.

Finally, Centennial proposes to maintain the county road between the Jefferson City interchange, Corbin, Wickes, Finn Gulch, and the mine site during the life of the venture.

While the substantive points of the company's proposal need to be negotiated with Jefferson County, the major concepts are as follows:

Road Reconstruction: Centennial will up-grade the existing county road between the Jefferson City interchange and the Centennial Ranch property as follows:

1. Traffic through Jefferson City will be routed on two streets -- one way in and one way out. Both roads will use existing county right-of-way.
2. The access streets through Jefferson City will be repaved up past the Community Hall.
3. The Corbin-Wickes Road will be widened, new culverts installed, drainage improved as necessary, and the entire surface graveled.
4. A by-pass will be built around Corbin south of the existing road, eliminating mine traffic in the community.
5. A new section of road will be constructed across the Centennial Ranch and up the east and south sides of Alta

Mountain to the project site. There, it will merge with an existing road that drops into the Clancy Creek drainage.

6. The existing county road north of Wickes across Chute Creek will be closed, and traffic directed over the new roadway.

The estimated cost of road construction is \$240,000. Centennial's project engineers will design the road improvements. Centennial also will supervise the construction process and finance it. The Jefferson County Commission and/or their designated representative will be asked to participate in the planning process and monitor the work as it proceeds. Weather permitting, road construction will be undertaken at the on-set of project construction in the fall of 1985 or spring of 1986. Centennial proposes to receive a tax credit equal to the total reconstruction fee over a three year period commencing the first full year of commercial production, or in the fourth year of operation if the mine is assessed as new industrial property under Section 15-6-135, MCA. Tax credits will be applied to the company's property tax obligation to the county.

Road Maintenance: Centennial will maintain the road linking Jefferson City, Corbin, Wickes, Finn Gulch and the mine site throughout the mine's operating life. Again, specific substantive details need to be worked out with Jefferson County, but the main points of the proposal are as follows:

1. Centennial will provide all routine maintenance services currently provided by Jefferson County including periodic surface blading, dust suppression, clearing/fixing culverts and bridges, and snowplowing.

2. Jefferson County will be responsible for major capital repairs caused by acts of nature.
3. Centennial will prepare an annual budget for projected road maintenance expenses and submit same to the county for their review and approval. In turn, the actual maintenance expenditures will be refunded in full against the company's tax liability in the road fund at the close of the fiscal year.
4. The county shall retain title to the reconstructed portions of the roads and will be granted title to any new sections built to replace the Wickes-Chute Creek section. The county shall retain the right to inspect the roads and to participate in their management with Centennial Minerals. The proposed new section of road to the mine site will be maintained as a public facility.
5. Centennial will develop a maintenance policy and schedule in cooperation with Jefferson County and the local school districts to insure that the Corbin-Wickes Road, a designated bus route, is open to school bus traffic.

The initial cost estimate for road maintenance is \$36,000 annually, established on the basis of \$50 per hour for one driver and a road patrol. Costs will vary seasonally depending upon the amount and type of work necessary. The budget will be adjusted annually to reflect actual and necessary expenses.

Related Commitments: Given the location and condition of the Clancy Creek Road, Centennial has elected not to use it for mine access unless the Corbin-Wickes Road is impassable for some reason. Under normal operating conditions, all mine traffic will access Montana Tunnels through Jefferson City, go by Corbin, and reach the mine over the new roadway proposed for the area.

LAW ENFORCEMENT

Description of Existing Conditions

The principal law enforcement agency in the county is the Jefferson County Sheriff's Department. The department is headquartered in Boulder across the street from the county courthouse. The department's offices and jail date from the late 1800's and are obsolete by all standards. In November 1984, the county voters passed a \$13 million bond issue to build a new law enforcement center and 11-bed jail. Construction is scheduled to begin in the spring of 1985.

The Jefferson County Sheriff's Department has a sworn staff of 10 officers, two of whom are based in Clancy and one in Whitehall. A sheriff's reserve was recently formed and is expected to have between 10 and 15 members. The department has eight patrol vehicles, including:

2	--	1984 Ford LTD sedans
1	--	1982 Four-wheel drive Eagle sedan
1	--	1980 Four-wheel drive Eagle sedan
1	--	1980 Four-wheel drive Chevy Blazer
1	--	1979 Chevrolet Impala sedan
1	--	1979 Four-wheel drive Subaru station wagon
1	--	1979 Four-wheel drive Chevy pick-up truck

The 1982 Eagle and 1980 Chevy Blazer are based in Clancy; one Ford LTD is located in Whitehall with the balance of the department's vehicles in Boulder. Vehicles are replaced as the budget allows but, the department tries to replace one or two each year.

The Sheriff's Department operates the emergency dispatch system for fire, ambulance, and law enforcement, in central and northern Jefferson County. There are four full-time dispatchers providing 24-hour dispatch services. The salary of one dispatcher is paid by the Town of Boulder in return for city police dispatch services.

Whitehall and Boulder each have a municipal police force. Boulder has two full-time officers. They work out of the sheriff's office but the two agencies have separate jurisdictions, command structures, and budgets. Whitehall has one full-time and one half-time police officers. In the Whitehall area, dispatch service for the county sheriff is handled through the city police.

Table 4-12 shows a series of law enforcement staffing ratios for Jefferson County and ten other similar populated Montana counties. Jefferson County shows the lowest officer to population ratio (1:456), has the smallest share of land area and fewest miles of rural roads to patrol. The Jefferson County Sheriff's Department is one of the few county law enforcement agencies in Montana whose officer/population ratio is below the commonly recommended standard of one officer per 500 people (Intermountain Planners, 1974; Brisco Maphis Murray Lamont, 1978; Real Estate Research Corporation, 1976). The other ten counties on the table average one officer per 670 residents.

Despite the favorable comparison presented in Table 4-12, Jefferson County faces some unique law enforcement problems. The county

TABLE 4-12
LAW ENFORCEMENT STAFFING RATIOS: SELECTED SMALL COUNTIES

<u>Jurisdiction</u>	<u>Sworn¹ Officers</u>	<u>Population²</u>	<u>Population² Per Officer</u>	<u>Land³ Area</u>	<u>Land Area Per Officer</u>	<u>Road⁴ Miles</u>	<u>Miles Per Officer</u>
JEFFERSON	10	4,558	456	1,656	166	816	82
Blaine	5	4,316	863	4,259	852	1,981	390
Chouteau	8	3,259	407	3,988	499	2,610	322
Madison	8	5,448	681	3,590	449	1,128	141
Phillips	4	3,590	648	5,131	1,283	1,754	439
Pondera	4.6	3,017	656	1,632	355	1,115	242
Powell	3	2,935	978	2,329	776	938	313
Sheridan	3	2,117	706	1,681	560	1,374	458
Stillwater	7	4,159	594	1,793	256	917	131
Teton ⁵	6	3,684	614	2,275	379	1,467	245
Toole	10	5,559	556	1,931	193	1,286	129

¹Excludes officers of incorporated municipalities.

²Excludes population of incorporated cities and towns except for Madison County. All census figures from 1980.

³Entire county. Incorporated areas constitute a minimal amount.

⁴All local rural roads. Excludes interstate, federal and primary and secondary systems.

⁵Consolidated law enforcement.

Source: Sheriff's Department of each county listed
U.S. Bureau of the Census
Montana Department of Highways
Mountain International, Inc.

boundaries virtually stretch from the Helena city limits on the north to Butte's on the south. As such, Jefferson County experiences a large degree of mischievous and criminal activity "slopping over" the county line from its adjacent urban neighbors (Tom Dawson, pers. comm., August 14, 1984). Jefferson County also experiences a high degree of traffic in transit between Helena, Butte, and Bozeman. Aside from the fact that a certain share of the traveling public is involved in illegal activity, the traffic volume also generates work for the Sheriff's Department through calls for emergency assistance, accident response and investigation, and traffic patrol. Jefferson County's average daily jail population of 3.0 inmates is relatively high for a county of its size, and appears to be, in part, a reflection of its proximity to its urban neighbors (Tim McCauley, pers. comm., November 19, 1984). Tables 4-13 and 4-14 contain reports of criminal activity in Montana, Jefferson, and Lewis and Clark counties between 1975 and 1983. During that period, the state's overall crime rate has been relatively steady and has actually decreased 8.5 percent since 1980 even though the total number of reported crimes has actually increased. The total incidence and the crime rate in Jefferson County, likewise, has declined since the start of the decade. The crime rate is down 15.2 percent. During the past four years, Jefferson County's crime rate has averaged 2,302.5 reported Class 1 felonies per 100,000 population, fully 48.2 percent below the state average and 65.6 percent lower than Lewis and Clark County's crime rate. Jefferson County has approximately nine-tenths of one percent of Montana's population and four-tenths of one percent of its serious crimes.

TABLE 4-13

INCIDENCE AND RATE OF CLASS 1 FELONIES¹ IN MONTANA, JEFFERSON,
AND LEWIS AND CLARK COUNTIES, 1975-1983

<u>Year</u>	<u>Montana Total</u>	<u>Montana Rate²</u>	<u>Jefferson County Total</u>	<u>Jefferson County Rate</u>	<u>Lewis & Clark County Total</u>	<u>Lewis & Clark County Rate</u>
1983	34,980	4,281.5	151	2,052.2	2,733	6,073.1
1982	34,495	4,306.5	161	2,231.5	2,704	6,128.5
1981	35,872	4,529.3	179	2,509.1	2,833	6,493.8
1980	36,791	4,678.3	170	2,418.6	3,472	8,067.1
1979	34,880	4,437.7	205	2,692.8	3,095	7,536.3
1978	31,246	3,980.4	67	917.8	2,241	5,897.4
1977	31,900	4,191.9	NA	1,057.1	NA	6,815.7
1976	32,137	4,267.9	NA	3,146.9	NA	6,845.2
1975	33,174	4,435.0	NA	3,705.0	NA	5,498.0

¹Class 1 Felony = Murder, rape, aggregated assault, robbery, burglary, larceny/theft, auto theft.

²Rate per 100,000 population.

Source: Montana Department of Justice
Mountain International, Inc.

TABLE 4-14
INCIDENCE OF CRIMES AGAINST PERSONS AND
PROPERTY IN JEFFERSON COUNTY, 1977-1983

<u>Year</u>	<u># Crimes Against Persons</u>	<u># Crimes Against Property</u>	<u># Larceny Thefts</u>	<u>Theft As Percentage of Property Crimes</u>
1983	14	137	111	81.0%
1982	28	133	102	76.7%
1981	16	163	114	69.9%
1980	14	156	107	68.6%
1979	18	177	130	73.4%
1978	15	52	20	38.5%
1977	NA	NA	NA	NA

Source: Montana Department of Justice
Mountain International, Inc.

Table 4-14 shows the relative frequency of crime against persons (murder, rape, aggravated assault, robbery) and crimes against property (burglary, larceny/theft, auto theft). During the past four years, Jefferson County has averaged 10 violent crimes per year. Crimes against persons constitute 10.9 percent of all of the county's serious crimes. Larceny/theft is the most common Class 1 felony, comprising 74 percent of the property crime and 66 percent of the reported criminal activity.

The Sheriff's Department also handles search and rescue duties in the Whitehall and Boulder Valley areas of the county. On the north end, it is handled by the Elkhorn Search and Rescue, a private association.

Jefferson County does not have formal mutual aid agreements for law enforcement services with either Lewis and Clark or Silver Bow County although the sheriff describes the intercounty relationship as very cooperative (Tom Dawson, pers. comm., August 14, 1984).

The Potential Adverse Impact of the Montana Tunnels Project

The impact of mine development near Jefferson City and its associated population growth primarily will be experienced by the Jefferson County Sheriff's Department. The work load for law enforcement agencies will change in three ways. First, the development of the Montana Tunnels Mine will increase the need for security at the plant site to prevent or investigate theft, vandalism, and related acts that occur in and

near construction projects. While Centennial Minerals will provide its own security on site, the Sheriff's Department may be occasionally called for assistance.

Second, the travel of construction workers and later, mine workers, to the plant site will increase the number of vehicles using and accidents occurring on local roads. Either or both phenomena could require a response from local law enforcement personnel. Since mine commuters will travel to work almost exclusively on I-15, the Montana Highway Patrol will have primary responsibility for traffic control and accident investigation. The Jefferson County Sheriff's Department will, however, assist the Highway Patrol and oversee traffic control and accident investigation on the Corbin-Wickes Road.

Third, there likely will be a small change in the volume of criminal activity experienced by the county. Most of the new criminal activity will be misdemeanors. Felonious activity will be comparatively rare. Given the population level projected for the county during the mine's construction and operating stages, the degree of felonious activity probably will be less than five cases per year.

At the present time, Jefferson County has law enforcement coverage superior to other Montana counties of comparable size. Adding the Montana Tunnel's in-migrating population to the county will have little effect on the ratio of officers per unit of rural population. At present, the county is served by one officer per 456 persons, a value

that will increase to 510 persons by 1986 simply from non-mine population growth principally on the county's north end. The addition of mine construction would raise that ratio to one officer per 530 residents, or 27 percent of the total change experienced.

The Montana Highway Patrol can expect an increase in daily commuter traffic on Interstate 15. The increase will range from 213 to 572 vehicles per day during the construction period before declining and leveling out at about 288 vehicles per day in the fourth year of commercial operation. The increased traffic will be caused by mine related commuters, concentrate transport, and the movement of supply vehicles to the plant site. In total, mine related traffic will range from 8.1 percent to 19.1 percent of all vehicles on I-15 at Jefferson City. The increased traffic also will be accompanied by an increase in the number of vehicle accidents. There are expected to be from 6 to 13 traffic accidents each year that will require a response from the all law enforcement agencies. The Jefferson County Sheriff's Department may respond to traffic accidents on I-15, as well. The Sheriff's Department will have primary jurisdiction over the Corbin-Wickes Road where traffic is projected to increase from 54 to 572 vehicles per day in the absence of specific measures to hold down its volume.

Jefferson County's courts will receive a small increase in their caseloads as a result of mine development. Almost all judicial activity will take place in the justice court for matters dealing with traffic offenses, DUI, fish and game violations, disturbances, and the

like. Probation and parole services should not be affected by mine development.

Finally, when a community experiences economic development, the prospect of employment may serve as a magnet to attract persons and families seeking work. Transients are frequently labeled by law enforcement officers as a primary source of criminal activity taking place during economic development. The prospect of a community being visited by transients seeking work also is a function of the general state of the economy. If work is generally scarce in the Northern Rockies but perceived as plentiful in Jefferson County, the number of itinerant workers seeking jobs in the area may also increase and with it, the likelihood of criminal justice problems. Given the proximity of Helena, however, such problems are more likely in that community.

Alternatives for Mitigating Adverse Impact

Jefferson County is adequately policed, perhaps better so, than rural areas and small towns throughout Montana. The projected increase in the area's population is small and should not unduly burden the existing contingent of law enforcement officers. It does not appear as if Jefferson County needs additional law enforcement manpower.

The Sheriff Department's communication system has some problems that limit its efficiency and which should be repaired to improve the department's overall emergency response capability. Current radio system deficiencies include:

1. Department uses a low-band system for communication while the State of Montana and other law enforcement agencies are converting to a high-band system.
2. Several Jefferson County emergency services use high-band systems that are not compatible with the department's low-band system.
3. The Boulder radio site is connected to the departmental control center by telephone line. It is unreliable and needs to be replaced by a low density, microwave system.

Jefferson County law enforcement services are likely to be only "minimally" affected by the development and operation of the Montana Tunnels Project. As such, no alternatives for mitigating adverse impact are required.

Centennial Minerals' Proposed Plan of Action

Notwithstanding the company's assessment of "little to no adverse impact" upon law enforcement services, Centennial is committed to a policy of developing a strong working relationship with Jefferson County and its member local governments. As such, there are actions the company can undertake to improve the operating environment in which the Sheriff's Department works for the benefit of the county, its citizens, and the company itself. Accordingly, Centennial proposes the following course of action.

1. Centennial will provide Jefferson County with \$18,000 for the purchase of new communications equipment as the first step in upgrading the department's communication system. Per a priority listing of equipment needs provided by the department, the equipment to be purchased and its estimated cost is listed below.

-	VHF Mobile relay (located in Saddle Mountain area)	\$ 4,300
-	2 channel, 2 receiver control station at Boulder radio site	4,400
-	3 VHF mobile radios for patrol vehicles at \$1,600 each	4,800
-	3 VHF portable radios for law enforcement officers at \$1,500 each	<u>4,500</u>
	Total	\$18,000

Payment will be made in a lump sum within 30 days of Centennial Minerals commencing construction of the Montana Tunnels Project. The funds identified above are intended as a tax prepayment.

2. Augment the Jefferson County Sheriff's reserve by committing the company security staff as special duty deputies for use by the Sheriff's Department on an as needed basis. This step presupposes that such staff only would be used for functions such as search and rescue or general peacekeeping during special events (i.e., rodeos) when the department needs additional manpower on a limited basis.

SOLID WASTE MANAGEMENT

Description of Existing Conditions

In Boulder, door-to-door solid waste collection is provided by Guilio's Garbage Service, a private contractor based in the Boulder-Basin area. Residents contract individually for collection services. Collection is provided once a week for residential users and twice weekly for businesses. The private contractor uses two rear loading packer type vehicles with 18 and 16 cubic yard capacities (Robert Peccia and Associates, 1980). The current service fees are \$4.00 per month for households and varying fee schedules for businesses. In addition, Boulder residents are assessed by the county \$42.00 per year for the Boulder sanitary landfill, and businesses are charged various fees (Jeannie Knight, pers. comm., September 9, 1984).

Jefferson County established a solid waste disposal district for the entire county, but it is not mandatory countywide. The county administers two landfills, one in Whitehall and the other in Boulder. The Boulder landfill is leased from the State of Montana and is located two miles south of town on the Little Boulder Road. The county assumed responsibility of operating the Boulder landfill from the town in 1980. The landfill contains about 20 acres and has an estimated 10 years of additional use (Jeannie Knight, pers. comm., September 9, 1984).

The county provides 40 yard containers for the communities of Montana City, Clancy, and Jefferson City, and subdivisions located in northern

Jefferson County, with two to three containers per site. The county is also responsible for solid waste collection in those areas. A 1974 Mack truck capable of engaging a standard 20'6" container is used for collections, which are generally made twice a week. The county plans to implement a countywide solid waste collection schedule (Jeannie Knight, September 19, 1984).

Accurate waste generation data for Jefferson County is not readily available. Based on the statewide average of 3.25 pounds/capita/day in communities of 1,000 to 5,000 persons and 2.25 pounds/capita/day for rural residents, and based on type of waste, waste generation in 1978 was estimated to be approximately 4,000 tons (Robert Peccia and Associates, 1980).

Potential Impact of the Montana Tunnels Project

Construction and operation of the Montana Tunnels Project will generate three sources of solid waste. The first source will consist of construction debris (wood scraps, packaging, pieces of metal, etc.) created during the 1985-87 construction period. This waste will be hauled by the contractor either to the Jefferson City garbage collection point, to the Jefferson County landfill near Boulder, or will be buried in one of the mine's waste rock dumps or landfills. The second source of waste will consist of industrial materials created by the operation and maintenance of the mining and milling process. Those wastes primarily will include construction type debris, office/paper products, and waste oils and lubricants. At this time, Centennial

plans to use either the solid waste collection and disposal system at Jefferson City, or bury Class 2 and Class 3 materials in the waste rock dumps or a landfill on site. Waste oil and lubricants will be sold to a commercial firm that recycles such products. One company has already approached Centennial regarding its services. Other materials such as scrap iron also will be sold for recycling whenever feasible. The third source of waste consists of household garbage created by in-migrating households. Those parties either will use the established countywide waste disposal system or haul their garbage to the local landfill for disposal.

Montana Tunnels will not produce hazardous waste materials as defined by current state or federal law. Sodium cyanide will be used to extract the gold from other waste materials in the milling process. The cyanide is washed from the ore after use and continuously recycled through the milling process. Neither cyanide nor other reagent materials used in the flotation process will enter the plant's solid waste stream.

The amount of solid waste likely to be generated by the project is relatively small. The principal impact on the solid waste district will be from in-migrating households. The expected volume of household waste during the 15 month construction period is 65.2 tons, an amount equal to 1.45 "green boxes" per month. During the first three years of mine operations, in-migrating households will generate 26.1 tons of waste annually, increasing to 38.6 tons (i.e., 1.07 green boxes per

month) in the fourth year of operations. Household waste production will then stabilize at that level. For collection purposes, household wastes will be widely distributed -- ranging from Montana City south to Boulder -- and will not constitute a significant amount at any particular collection point. All new households will pay the annual household assessment levied against Jefferson County homeowners for waste collection and disposal services. Service fees are set to cover the cost of service.

Alternatives for Mitigating Adverse Impact

The Montana Tunnels Project should not have an adverse impact on the provision of solid waste services by the Jefferson County Refuse Disposal District. The total volume of household waste is small and will be widely distributed throughout central and northern Jefferson County such that the existing collection and disposal system can easily accommodate the increased volume. It is possible for a particular collection point to experience a large increase in refuse if in-migrating mine workers concentrate their residences in disproportionately large numbers within a limited geographical area. While that is not expected to happen, it may and Centennial will work with the refuse disposal district to correct the problem.

The main alternatives for solid waste disposal at the plant site are:

1. Centennial can establish a private landfill on its own property for its exclusive use to dispose of Class 2 and 3 wastes (i.e., putrescible and inert materials).

2. Centennial can bury inert materials in the rock dumps or a landfill and transport putrescible materials to the Jefferson City collection point for pick-up and disposal in the district landfill.
3. Centennial can transport all Class 2 and 3 wastes to the Jefferson City collection point for disposal.

Centennial Minerals' Proposed Plan of Action

The Montana Tunnels Project should not adversely impact the Jefferson County Refuse Disposal District. Centennial proposes to enact the following steps to insure that solid waste disposal does not become a problem.

1. Centennial will establish a private landfill on its property for the company's exclusive use pursuant to the statutes and regulations of the State of Montana for the disposal of Class 2 and Class 3 wastes.
2. Centennial will sell recyclable material to local recycling firms whenever feasible. Waste oil and lubricants will be disposed of in this manner.
3. Centennial will negotiate a standby agreement with the Solid Waste District to use their services in the event waste disposal is not practical at the mine site. The company would, of course, reimburse the district for any services it provided the company.
4. Centennial will monitor the residential locations of the mine and construction workforces and periodically contact the Solid Waste District to insure that the project is not causing either a collection or disposal problem. No problems are expected at this time. Should one occur during the construction period, the expected peak of in-migration, Centennial will amend this plan or take other action as required.

WATER SUPPLY AND WASTEWATER TREATMENT

Description of Existing Conditions

Residents in the rural areas of Jefferson County rely upon wells for water and septic tank systems for wastewater treatment. Communities in the northern part of Jefferson County with central water systems include Alhambra, Gruber Estates, Blue Sky Heights, Saddle Mountain Estates, and Sunnybrook Acres. New subdivisions are required to have central water systems. The Town of Boulder operates the water supply system and the sanitary sewer system for the town's residents.

The Boulder water supply is drawn from four wells drilled in 1952, 1964, 1965, and 1974, respectively. All wells are located within the city limits. The entire system has a rated capacity of 1,800 gpm. Water is pumped to a 75,000 gallon reinforced concrete, elevated storage tank and a 500,000 gallon reinforced steel, elevated storage tank. Both tanks are located in the north part of town on Capital Hill. The 500,000 gallon tank was installed in 1979. Water is distributed by gravity from a 12-inch mainline to 4- to 8-inch distribution lines. When the system was first installed in 1953, all pipes were made of steel. Newer additions in the north part of town have plastic pipes. Water from the system is not treated, and at present, there is no need for filtration or chlorination equipment. Typically, only one well is needed and pumped at a single time. Well pumps are rotated on a weekly basis. The system services approximately

550 residential customers (1,600 persons) and 25 businesses. It also serves as a back-up for the Boulder River School and Hospital (BRS&H). Water consumption ranges from 345,000 to 720,000 gallons in the winter and up to 1.4 million gallons in the summer. All four pumps may be activated for several hours during the hot part of the day in the summer months. The town assesses a flat fee for the operation of the system based on faucets, bathrooms, and sinks for residential users, and on the type of commercial establishment for businesses (James Harper, pers. comm., August 3, 1984).

The Boulder sewer system consists of 4- to 11-inch branch lines connected to 12-inch clay main lines and a three cell lagoon. Each cell in the lagoon encompasses about six acres. The sewer system was constructed in 1967 under a joint venture between BRS&H and the Town of Boulder. Part financing was obtained from a Farmers Home Administration loan. Two cells were added to an existing cell used by the BRS&H. Effluent from the lagoon is discharged into Boulder River, after an 86 day detention period in each cell. Although information on the sewer system flow rate is not available, the mains are seldom more than half full (James Harper, pers. comm., August 3, 1984).

When inspected in 1984, both the water and sewer systems "appeared to be in fine shape" although Cell #3 evidenced some seepage (Montana Department of Health and Environmental Sciences, 1984).

The Potential Impact of the Montana Tunnels Project

The only potential impact on water supply and wastewater treatment will be from in-migrating households associated with the Montana Tunnels Project. The mine/mill itself will supply its own water needs from wells or surface water rights and treat its own sewage.

In-migrating construction and mine workers will reside in one of the three types of locations: 1) an established residential subdivision, 2) a rural lot or individual parcel of land that is not within a formally platted subdivision, or 3) within the municipal boundaries of the Town of Boulder. Immigrants to one of the county's new subdivisions constitute no burden to water supplies or wastewater treatment since they will use capacity built into the subdivisions and so approved by the State of Montana. Immigrants selecting undeveloped housing sites in rural areas will be responsible for providing their own water and sewage services. Immigrants to Boulder will use the city water and sewer systems within which there is ample capacity to accommodate the projected level of new immigrants to the area. In fact, both systems could accommodate a near doubling of the local population before the systems would be pushed to their limit.

Alternatives for Mitigating Adverse Impact

Water supply and sewage treatment systems owned and maintained by non-governmental units are not eligible for impact assistance under the Montana Hard Rock Impact Mitigation Act. It is assumed that such systems will operate on a cost effective basis through hook-up charges

and fee schedules that fully assess newcomers for their fair share of services. Likewise, the act does not provide impact assistance for individuals who choose to live in areas where they must provide their own water and/or wastewater treatment. The only eligible entity in Jefferson County that both provides water and wastewater treatment and is likely to be affected by the Montana Tunnels Project, is the Town of Boulder. The existing resources of the town's utility systems are adequate to meet much more than the expected level of immigration to the community. Furthermore, the water service fee structure appears adequate to cover increased operating costs. No alternatives appear necessary to mitigate the expected level of impact to either the water or sewer system.

Centennial Minerals' Proposed Plan of Action

Centennial Minerals will monitor employee residence locations and periodically contact the Town of Boulder to assess whether the community is experiencing any water supply or wastewater treatment problems as a result of mine development, although no problems are foreseen at this time. Should difficulties subsequently occur that have been caused or magnified by Montana Tunnels, the company will amend this plan or take other action to correct the problem in concert with the Town of Boulder.

MEDICAL SERVICES

Preface

The only medical service provided by a local governmental entity in either Jefferson or Lewis and Clark counties is the Boulder Volunteer Ambulance, a service that is organized and administered through the Town of Boulder. The Clancy Quick Response Unit, the only other public medical service provided in central and northern Jefferson County, is a voluntary association and, technically, not eligible for impact assistance under the Hard Rock Impact Mitigation Act. The Elkhorn Health Services Clinic, a non-profit cooperative, which plans to open in the spring of 1985, is similarly situated with respect to the Hard Rock Act.

Jefferson County residents have historically sought medical services in either Butte or Helena. Helena is the primary medical service center for central and northern Jefferson County, and all of its health services are provided through private vendors of one type or another. The next section describes the variety of services available in the region.

Description of Existing Conditions

Physician Services: At present, there are no physicians in the private practice of medicine in northern or central Jefferson County; one is located in Whitehall. Residents of Boulder, Basin and points north seek medical care in either Butte or Helena.

The community of Boulder actively recruited a physician to serve the town through a non-profit cooperative called the Elkhorn Mountain Health Service (Drew Dawson, pers. comm., August 14, 1984). The recruitment effort has been successful and a new family practitioner is scheduled to open an office in Boulder during July 1985 (Independent Record, October 17, 1984).

There are 66 full-time practicing physicians in Helena, offering services in 17 fields of specialization, including:

<u>Field of Specialization</u>	<u>Number</u>
Allergy	2
Anesthesia	3
Dermatology	2
Ears, Nose, and Throat	2
Emergency Medicine	1 (St. Peters)
Family Practice	10
Internal Medicine	10
Obstetrics/Gynecology	3
Opthomology	6
Pathology	1 (St. Peters)
Pediatrics	6
Plastic/Reconstructive Surgery	1
Psychiatry/Neurology	4
Radiology	4
Surgery	6
Urology	2

The emergency room physician and pathologist work at St. Peter's hospital and do not maintain a private medical practice. Two physicians are engaged in genetic research at Shodair Hospital and, likewise, are one step removed from general practice. The Fort Harrison Veterans Administration Hospital has a complement of 17

physicians who limit their practice to Fort Harrison patients, eligible veterans from throughout Montana.

Helena also has the services of 26 general practice dentists, three orthodontists, one oral surgeon, and a periodontist. Another dentist has a practice in East Helena. Two Helena dentists offer services in Boulder two days per week and provide medical care to the patients at BRSH. There are several podiatrists, chiropractors, accupuncturists, optometrists, and an osteopathic physician in Helena, as well.

Hospitals and Long Term Care Facilities: There are no general hospitals in Jefferson County. A small hospital suite is maintained at BRSH for its patients but is not open to the general public. Jefferson County residents requiring hospitalization generally travel to Butte, Helena, or one of Montana's larger medical centers located in Great Falls, Billings, or Missoula.

The Hillbrook Nursing Home located near Clancy is Jefferson County's only long-term care facility. It has 67 beds (Montana Department of Health and Environmental Sciences MDHES , 1984).

There are three hospitals in Lewis and Clark County: St. Peter's Community Hospital, Shodair Children's Hospital and the Fort Harrison Veterans Administration Hospital. Admission to the latter facility is restricted to eligible veterans. St. Peter's Hospital is the primary hospital facility in the county. The current building was erected in

1968 and remodeled and expanded between 1980 and 1982. The hospital has 116 licensed beds and, in 1983, operated at 67.7 percent of capacity. Of the 5,488 admissions that year, 4,535 or 82.6 percent were from Lewis and Clark County; another 401 patients (7.3 percent) were from Jefferson County (MDHES, 1984; Jackie Fisher, pers. comm., August 7, 1984).

Services offered at St. Peters Hospital include:

- Postoperative recovery room
- Intensive/coronary care unit
- Pharmacy with full-time registered pharmacists
- Radiology
- Radium therapy
- Diagnostic radioisotope
- Histopathology lab
- Blood bank
- Electroencephalography
- Inhalation therapy department
- Premature nursery
- Renal dialysis inpatient and outpatient
- Physical/respiratory therapy
- Chemotherapy
- Maternity care
- Emergency department
- Social work department
- Electrocardiography
- Outpatient surgery
- Ultrasound
- C-T scanner

The Montana Department of Health recently authorized St. Peter's to open a 10-bed psychiatric wing (Independent Record, November 9, 1984). The hospital emergency room is open around the clock but is only staffed with an on-duty physician on weekends and from 8:00 AM to 5:00 PM, Monday through Friday. At other times, a list of physicians are "on-call" on a rotating basis.

St. Peter's has 74 active medical staff (physicians and dentists) and 372 full-time equivalent support staff. Of the 372 support staff, 115 are registered nurses (Jackie Fisher, pers. comm., August 7, 1984).

Shodair Children's Hospital was established in 1896 as a facility for crippled children. Over time, the need for a full service hospital of that type declined and Shodair became a more broadly based medical center. In-patient hospital care is restricted to children 14 years of age and younger. Out-patient care is provided to both children and adults. Shodair's primary services include: .

- Allergy clinic
- Genetics & genetic counseling
- Skeletal dysplasia clinic
- Heart clinic
- Physical therapy
- Respiratory therapy
- Surgery
- Orthopedic clinic
- Radiology
- Adoption program
- Pediatric neurology

In 1983, an inpatient, chemical dependency program was created at Shodair for adolescents between the ages of 12 and 17. Patients are referred to the program from Montana and four surrounding states. The program has an average daily population of 15 patients (Dan Yazak, pers. comm., August 13, 1984).

Shodair is a 36-bed hospital. In 1983, it reported 1,155 admissions and 4,097 patient days of care or, an occupancy rate of 31.2 percent

(MDHES, 1984). The facility has a staff of 65 including eight licensed practical nurses, 25 registered nurses, and 65 physician associates (Dan Yazak, pers. comm., August 13, 1984).

There are three long-term care facilities in Lewis and Clark County, all located in Helena, including:

- | | | |
|---|----------------------------|----------|
| - | Cooney Convalescent Center | 60 beds |
| - | Helena Nursing Home | 63 beds |
| - | Western Care Nursing Home | 108 beds |

The Cooney Convalescent Center is owned and operated by Lewis and Clark County. It just recently moved into a new building adjacent St. Peter's Community Hospital in Helena's Medical Park. Helena's nursing homes operated between 87.7 percent (Cooney) and 97.5 percent (Helena) of capacity during 1983 (MDHES, 1984).

Ambulance Services: Jefferson County has two volunteer ambulance services, one each in Whitehall and Boulder, and a Quick Response Unit in the Montana City/Clancy area.

The Boulder ambulance is staffed by 15 volunteer workers each of whom is a certified Emergency Medical Technician (EMT). One member is certified in mine rescue work, as well. The ambulance is operated through the Town of Boulder and funded by contributions from Jefferson County, Boulder, fees for service, and donations. Its service area is roughly triangular in shape extending about 20 miles southeast along Highway 69 in the Boulder Valley, 20 miles southwest past Basin along Interstate 15, and north to the Clancy exit.

The Boulder ambulance has two vehicles, including:

- A 1974, Dodge Modular ambulance, Type 1 with approximately 65,000 miles
- A 1969, Pontiac Type 4 ambulance, coach style with approximately 71,000 miles

The ambulance is centrally dispatched through the Jefferson County Sheriff's Department. All volunteers are equipped with pagers and/or radios. A separate emergency number connects the dispatch center to the home of members of the Quick Response Unit on the county's north end. The Quick Response Unit does not have an emergency vehicle. Instead, the members carry first aid equipment in private vehicles and work to stabilize the patient until an ambulance from either Boulder or Helena can reach the scene (Drew Dawson, pers. comm., August 10, 1984).

Ambulance service in southern Lewis and Clark County and northern Jefferson County is provided by St. Peter's Ambulance Service, located at St. Peter's Community Hospital in Helena. The hospital purchased the Linden Ambulance Service, a private company that had operated in Helena for many years. The ambulance service area includes all of southern Lewis and Clark County extending north to Wolf Creek and Craig, northern Jefferson County to Jefferson City, and the Avon-Elliston portion of Powell County. Service is available 24 hours per day, seven days per week.

St. Peter's Ambulance Service operates three emergency vehicles:

- Chevrolet Type 1, long distance, 1975 modular truck
- Dodge Type 1, long distance, 1975 modular truck

- Chevrolet Type 2, 4-wheel drive van

At present, no vehicle is equipped with "Jaws-of-Life" extraction equipment, however, they are equipped with basic extraction tools and use the "Jaws-of-Life" as needed from either the sheriff's or fire department. St. Peter's is dispatched through the Capital Answering Service, until a central city-wide dispatch system is installed in the fall of 1985. The communication system in the ambulances are Phoenix SS, 16-channel synthesized radios. The vehicles are not currently equipped with radiological equipment.

St. Peter's Ambulance has seven full-time and ten part-time employees, of all whom are trained EMT's. Six nurses are attending a training program in order to be available, by June or July of 1985, to accompany all emergency ambulance trips. None of the EMT's are certified for mine rescue by the U.S. Bureau of Mines.

Most air ambulance service is available through the North Central Mercy Flight "Life Chopter," created by the combined efforts of both Deaconess and Columbus Hospitals of Great Falls. St. Peter's has also used the services of "Life Flight" provided by St. Patrick's Hospital of Missoula, and, on occasion, a transport airplane supplied by Morrison Flying Service of Helena, and one out of Billings (Jim DeTienne, pers. comm., April 24, 1985).

The Potential Impact of the Montana Tunnels Project

There are three potential sources of illness or injury that will make demands upon the health service system in the local area, including:

1. In-migrating Mine-Related Households: Routine and emergency cases of illness and/or injury.
2. Line Traffic: Principally vehicle accidents of workers commuting to and from work.
3. Industrial Accidents: Accidents involving construction and mine operations workers at the project site.

In-migrating households constitute a small and largely unmeasurable demand for medical services. Most health care needs will be routine and purchased from the private health care system by the individual. An occasional ambulance call can be expected but given the small number of households (20 to 82) and population involved (44 to 188) in Jefferson County, the incidence of such calls is likely to be less than once per year.

Table 4-15 shows the estimated number of vehicle accidents associated with the Montana Tunnels Project during its construction and operational phases. Table 4-16 shows the estimated number of industrial accidents during the same period. Vehicle accidents were derived on the basis of accident frequency rates provided by the Montana Highway Traffic Safety Division. Industrial accident rates were drawn from the National Safety Council for the metal mining and non-ferrous metal processing industries.

TABLE 4-15

ESTIMATED VEHICLE ACCIDENTS BY POINT OF ORIGIN
FOR CONSTRUCTION AND MINE OPERATION PERIODS

	<u>Construction Period</u>					
	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>5th Quarter</u>	<u>Total</u>
<u>Interstate Points South¹</u>						
Butte Area	.244	.257	.631	.829	.253	2.214
Central Jefferson County	.040	.043	.104	.181	.043	.411
Trucks	.017	.017	.024	.024	.017	.099
Subtotal	.301	.317	.759	1.034	.313	2.724
<u>Interstate Points North¹</u>						
Helena area	.249	.260	.622	.939	.256	2.326
Northern Jefferson County	.030	.030	.074	.134	.030	.298
Trucks	.017	.017	.024	.024	.017	.099
Subtotal	.296	.307	.720	1.097	.303	2.723
Interstate subtotal	.597	.624	1.479	2.131	.616	5.447
<u>Corbin-Wickes Road²</u>	.788	.821	1.952	2.962	.813	7.336
Grand Total	1.385	1.445	3.431	5.093	1.429	12.783

TABLE 4-15

ESTIMATED VEHICLE ACCIDENTS BY POINT OF ORIGIN
FOR CONSTRUCTION AND MINE OPERATION PERIODS (CONTINUED)

	Operations Period					
	Operation Years 1-3			Operations Years 4 Plus		
	Interstate Points South	Interstate Points North	Corbin- Wickes Rd	Interstate Points South	Interstate Points North	Corbin- Wickes Rd
Monday - Friday day shift	.685	.971	2.119	.942	1.244	2.802
Saturday - Sunday day shift	.119	.120	.302	.201	.234	.580
Saturday - Sunday afternoon shift	.209	.202	.523	.357	.389	.987
Saturday - Sunday night shift	.209	.202	.523	.357	.374	.906
Total	1.222	1.495	3.467	1.857	2.241	5.215
Grand Total		6.184			9.313	
		=====			=====	

¹Interstate rate: 1.32 accidents per 1,000,000 miles.²Corbin-Wickes Road rate: 11.38 accidents per 1,000,000 miles.Source: Peccia and Associates
Montana Department of Highways
Mountain International, Inc.

During the 15-month construction period, a total of 12.8 traffic accidents are projected involving 27 persons. Approximately 43 percent of the accidents will occur on Interstate 15, approximately half of which will take place south of Jefferson City within the service area of the Boulder Ambulance, the other half will occur on I-15 north of Jefferson City within the range of both the Boulder and St. Peter's ambulances. The remaining 57 percent will occur on the Corbin-Wickes Road, within the service range of the Boulder Ambulance. During the first three years of mine operation, 6.2 traffic accidents per year are projected. In year four, that number increases to 9.3 traffic accidents annually. Again, accidents on I-15 are expected to be split fairly evenly between points north and south of Jefferson City. The Corbin-Wickes Road is forecast to experience about 56 percent of all accidents.

Approximately 40 percent of all accidents involve non-fatal injuries. One traffic fatality can be expected to occur every three to four years among the mine workforce.

Table 4-16 shows the projected number of industrial accidents expected at the plant site. Slightly over 42 accidents, of which almost 15 will involve time lost from work, are forecast to occur during the construction period. During the first three years of operation, 25.3 accidents, including 9.7 lost time accidents, are projected annually. The increase in employees during the fourth year is expected to raise

TABLE 4-16

ESTIMATED INDUSTRIAL ACCIDENTS DURING
CONSTRUCTION AND MINE OPERATION PERIODS

	<u>Construction Period¹</u>					<u>Total</u>
	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>5th Quarter</u>	
Total Accidents	5.49	5.77	10.1	15.1	5.7	42.2
Lost Time Accidents	1.9	2.0	3.6	5.3	2.0	14.8
Lost Days of Work	40	42	74	110	42	308
 <u>Operations Period²</u>						
	<u>Operations Years 1-3</u>			<u>Operations Years 4 Plus</u>		
Total Accidents	25.3			37.0		
Lost Time Accidents	9.7			14.2		
Lost Days of Work	251			367		

¹ Based on three year average of construction accident rate of 10.98 accidents per 100 FTE employees.

² Based on three year average of metal mining and non-ferrous metal processing accident rate of 10.88 accidents per 100 FTE employees.

Source: National Safety Council¹
Mountain International, Inc.

the annual accident rate to 37 accidents of which just over 14 will be lost time accidents.

The prime contractor will maintain an ambulance and first aid station at the plant site throughout the construction period. Centennial Minerals will take over the first aid/emergency service function when the mine formally begins operations. The first aid station will be manned 24 hours per day, seven days per week by a trained EMT. An ambulance will be kept at the mine as well. The company's ambulance and EMT's will be available to assist with traffic accidents on the Corbin-Wickes Road.

Alternatives for Mitigating Adverse Impacts

Aside from the need for emergency medical services at the plant site, the increased demand for medical services will be low. Centennial Minerals plans to provide onsite emergency care and will have an ambulance at the mine. It may need support from the Boulder Ambulance on occasion, and the company would like to negotiate a contract or establish a mutual aid agreement for additional emergency medical care.

Centennial Minerals' Proposed Plan of Action

The company plans to provide emergency medical services onsite with its own staff of certified EMT's. It will maintain a first aid station and ambulance as well. The first aid station/safety office will be manned around the clock, seven days per week.

Centennial Minerals proposes to negotiate a mutual aid agreement or contract with the Town of Boulder to use its ambulance and EMT volunteers as a source of backup support for the mine. The substantive details of such an agreement need to be negotiated. Centennial suggests that it include, but not necessarily be limited to, the following major concepts:

1. The Boulder Ambulance will be available to respond to emergency calls at the mine/mill site at the company's request. The company will reimburse the Boulder Ambulance for the cost of service.
2. Centennial Mineral's ambulance will be available to support the Boulder Ambulance, if needed, for major accidents or cases requiring several vehicles for transport that occur in the Corbin, Wickes, Jefferson City, and Boulder areas. The company will have only one emergency vehicle and prefers not to send it too far from base in case it is needed at the mine.
3. Centennial Minerals' EMT staff will be available to assist the Boulder Ambulance and/or Clancy Quick Response Unit in a support capacity for major accidents, etc., occurring within 15 or so miles of the mine. Again, the company must have trained EMT's onsite at all times when the plant is running.
4. The Boulder Ambulance will take the lead in organizing and providing training for emergency medical services. The company's EMT staff will jointly train with the Boulder/Clancy volunteer groups.
5. Centennial Minerals will provide the Boulder Ambulance and Clancy Quick Response Unit with a list of equipment available at the mine that can be "loaned out" for use in medical emergencies such as winches, hydraulic jacks, etc. At this time, the company does not anticipate owning heavy duty extraction equipment (i.e., Jaws-of-Life) but, whatever similar equipment is available will be shared with the surrounding community as needed.

It is recognized that the provision of a service even in a back-up capacity can be costly. Accordingly, Centennial Minerals proposes to make the following donations.

1. To the Town of Boulder, Centennial will provide \$5,000 for purchase of emergency service equipment. The community is considering the purchase of a new ambulance within the next couple of years. The grant funds can be applied to that purchase or for other types of equipment at the community's discretion.
2. To the Clancy Quick Response Unit, Centennial will provide \$2,500 for the purchase of emergency service equipment.
3. Centennial will make a donation of \$1,000 annually to the Boulder Ambulance to assist with its operating costs.
4. Centennial will make a donation of \$250 annually to the Clancy Quick Response Unit to help cover its operating costs.

FIRE PROTECTION

Description of Existing Conditions

Fire protection in Jefferson County is provided by ten volunteer departments, the Montana Department of State Lands, U.S. Bureau of Land Management, and U.S. Forest Service. The Forest Service covers those portions of the Deer Lodge and Helena national forests located within Jefferson County. The Department of State Lands and the Bureau of Land Management have responsibility for their holdings in the county. Six of the volunteer fire departments are formally organized fire districts; two are town volunteer fire districts in Boulder and Whitehall, and two are informally organized associations serving Clancy and Jefferson City (see Figure 4-1). Dispatch for all fire districts goes through the Jefferson County Sheriff's office. The Montana Tunnels Project is not located within the jurisdictional boundary of any fire district. The Montana City, Boulder, Boulder Valley, Clancy, and Jefferson City fire departments are within the area likely to be "affected" by the Montana Tunnels Project.

Boulder Fire Department: Fire protection within the city limits of Boulder is provided by the Boulder Volunteer Fire Department. The department has 28 members, 12 to 14 of whom are active. The district's one active vehicle is a 1965 Chevrolet 2-ton pumper with a 300 gallon tank and 750 gallons per minute (gpm) pump.

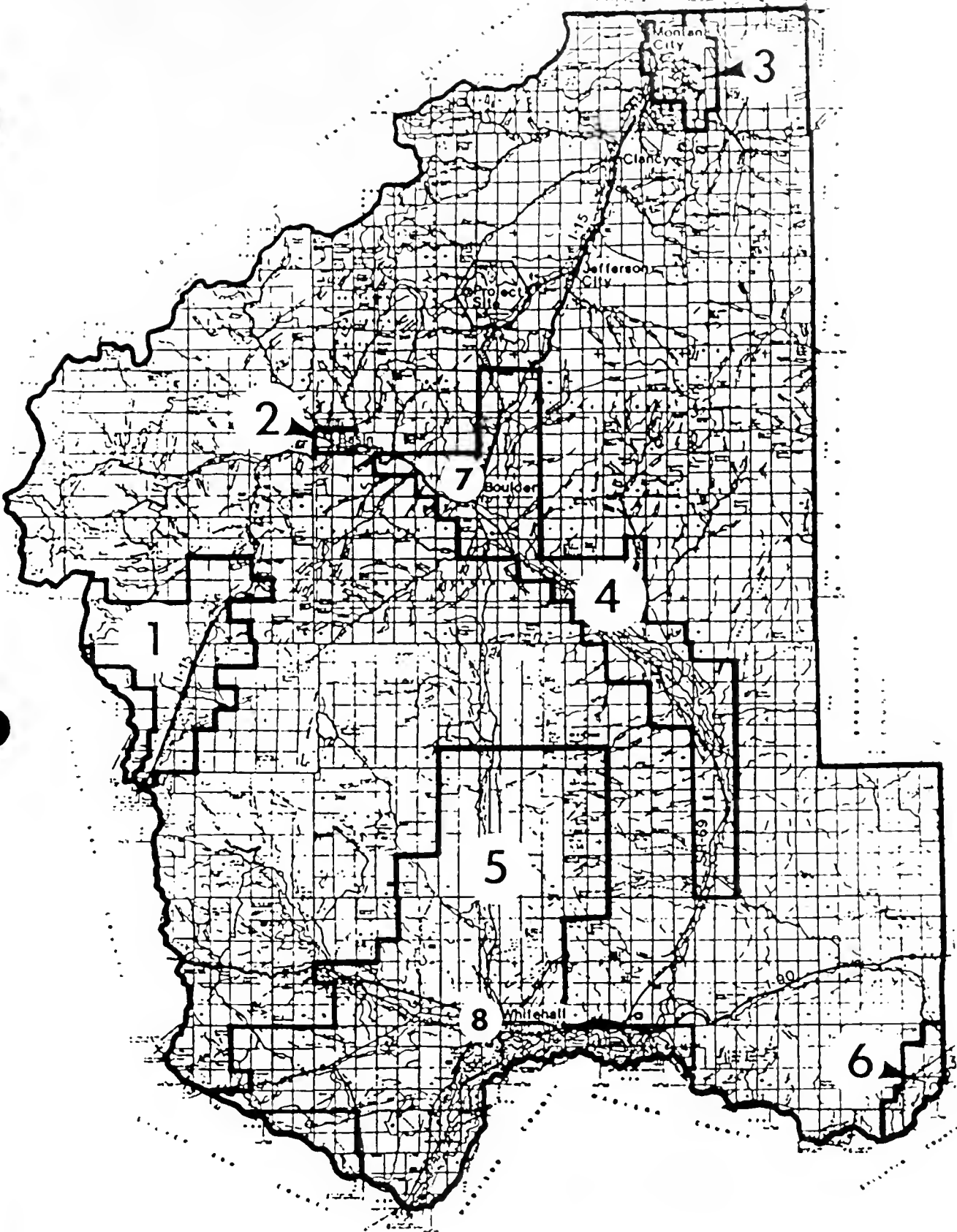


FIGURE 4-1: JEFFERSON COUNTY FIRE PROTECTION

Rural Fire Districts

- | | |
|---------------------|----------------------------|
| 1 -- Elk Park | 5 -- Jefferson Valley |
| 2 -- Basin | 6 -- Jefferson River (part |
| 3 -- Montana City | of Willow Creek RFD |
| 4 -- Boulder Valley | in Gallatin County) |

City Fire Departments

- | |
|----------------|
| 7 -- Boulder |
| 8 -- Whitehall |

The fire truck is housed in the Boulder Firehall two blocks north of the county courthouse. The firehall also houses the city ambulance.

The Town of Boulder has a central water system with 45 hydrants dispersed throughout the community. Most of the hydrants handle a 1,500 gallons per minute (gpm) water demand; the town's water storage tanks have a 575,000 gallon storage capacity. The town has a Class 6 fire rating which is above average for a small community with a volunteer department (Earl Hustis, pers. comm., October 30, 1984). The district provides fire protection for the Boulder River School and Hospital. The \$1,000 annual fee paid by the school is earmarked for a fire truck capital improvement fund. Local fire department resources can be augmented by the Boulder Valley Rural Fire District, if necessary. The Sheriff's office receives fire calls and dispatches via the town siren. Jefferson County is in the process of developing countywide reciprocal agreements among all fire districts under the Jefferson County Fire Council. The Council would be able to provide manpower and equipment for fire fighting in the event a local department needs assistance (James Harper; James Strieb, pers. comm., August 3 & 17, 1984).

Boulder Valley Rural Fire District: The Boulder Valley Rural Fire district extends north from Boulder to the crest of the Boulder Hill and south down the Boulder valley to within six miles of Interstate 90. The fire district has 15 volunteers, and six vehicles including a 1982 GMC two ton truck with an 1,100 gallon tank, and an army 1,000 gallon

tanker 6-by-6. The GMC is garaged in Boulder adjacent the city fire hall and the 6-by-6 is garaged in a satellite station 16 miles south of Boulder. The district responds to an average of six calls per year. The city ambulance is generally dispatched with the fire truck on residential fires (John Hiede, pers. comm., September 19, 1984). The district has a Class 10 fire rating (Earl Hustis, pers. comm., October 30, 1984).

Jefferson City Fire Department: The Jefferson City Volunteer Fire Department is an informal association which provides fire protection for the Jefferson City area, Corbin, Wickes, and south to the crest of the Boulder Hill. The department has 15 volunteers eight to 11 of whom are active. The fire truck is a 1949 Chevrolet with a 300 gallon tank and 250 gpm pump. The fire truck is garaged in an old school house on the west side of Jefferson City. The department's resources are adequate for small fires but cannot handle major fires. In addition, the fire truck cannot negotiate the steep logging and mining roads in its vicinity. The department has an informal back-up agreement with the Clancy fire district. Dispatch is handled through the sheriff's office. Funding is provided by donations (Jack Reilly, pers. comm., September 19, 1984). The Jefferson City area has been graded Class 10, or unprotected (Earl Hustis, pers. comm., October 30, 1984).

Clancy Fire Department: The Clancy Volunteer Fire Department is also an informal association. It provides fire protection for Clancy and

for areas north to the Montana City Fire District, two miles south of Clancy, and provides back-up for the Jefferson City Fire Department.

The fire department has 28 volunteer members. There are two fire trucks in the department, including a 1963 Dodge one-ton four-by-four with a 300 gallon tank, and a 1963 Ford one and a half ton truck with a 700 gallon tank. The firehall is located on the main street of Clancy. Dispatch is handled by the sheriff's office by phone or by pager. The district also relies on donations for financial support (Carl Anderson, pers. comm., September 27, 1984). This fire department is rated Class 8 residential and Class 9 commercial/industrial (Earl Hustis, pers. comm., October 30, 1984).

Montana City Rural Fire District: The Montana City fire district was formally organized in 1981. The district was created in response to increased residential development in the area. The Clancy Fire Department previously had the responsibility of fire protection for Montana City. The fire district has 16 volunteers and three vehicles, including a 1984 GMC "Quick Attack" with a 250 gpm pumper, a 1959 International Seagraves pumper with a 500 gpm pumper, and a 1964 Ford with an 1,800 gallon tank and 250 gpm pumper. The International does not meet current standards for fire suppression.

The fire trucks are housed at Saddle Mountain Estates. Both Saddle Mountain and Sunnybrook subdivisions have fire hydrants. The rated capacity of the Saddle Mountain hydrants is about 550 gallons per

minute, while the Sunnybrook subdivision hydrants have a lower capacity. All new subdivisions are required to install fire hydrants; however, existing hydrants may lack sufficient pressure and capacity to meet insurance requirements. The Kaiser Cement plant often supplies water for the district tanks. The Montana City fire district also provides protection to areas in the northern part of the county outside the formal boundaries of the district (Carl Anderson, pers. comm., September 27, 1984). The district is rated Class 9 because there is no graded water supply system for the area (Earl Hustis, pers. comm., October 30, 1984).

The Potential Impact of the Montana Tunnels Project

The Montana Tunnels Project will create two new sources of demand for fire protection services. First, there will be a need to protect homes and property of in-migrating construction and mine worker's household. Second, fire protection will be needed for the mine/mill itself. Overall, however, the increase in demand for fire protection will be minimal.

During the construction period, the total projected demand for housing units in Jefferson County ranges from 20 to 82 homes, most of which will be existing housing stock temporarily rented to construction workers. There are few rentals or trailer spaces in either the Montana City or Boulder Valley areas and it is highly unlikely that either fire district will experience much, if any, housing development as a result of Montana Tunnels. The Clancy, Jefferson City, and Boulder fire

protection areas will receive a greater number of immigrants, some of whom will bring house trailers and/or recreational vehicles (RV's) as their residences. Given available housing resources in the local area and the supply and distribution of trailer hookups, it appears unlikely that any particular fire protection area will receive as many as 20 new residences (e.g., mobile homes) during the construction period unless a specific attempt is made to either attract or centralize that form of housing development.

During operations immigrant mine workers and their households are expected to locate primarily in the Clancy and Montana City areas of Jefferson County. Perhaps one-quarter of the newcomers may build new homes. Thus, by the fourth year of operation, ten new homes will be built in the entire Clancy-Jefferson City area. Another five homes are likely to be built in the Montana City area with one or two new structures erected in either Boulder or the Boulder Valley fire protection areas. That volume of new construction does not constitute a significant impact upon any of the Jefferson County fire departments being considered here.

The Montana Tunnels mine/mill complex will supply its own fire protection services. The plant will be built with a sprinkler and/or dry pipe fire suppression system at the time of construction. A 500,000 gallon storage tank will be built as a water supply for such purposes. The company also will have a truck with a portable pump and storage tank available for fire fighting on its property outside the

immediate plant site. The mine and ore processing complex will not place a direct demand for fire protection upon any of the local fire departments. The company is interested in entering into a contract or memorandum of understanding with the Jefferson City Fire Association to have that group provide backup support to the company's fire fighting unit.

Alternatives for Mitigating Adverse Impact

The increased demand for household fire protection is small and can be accommodated within the existing resources of the local fire departments. Fire protection at the mine/mill site will be managed by Centennial Minerals, and alternative methods for meeting that need principally revolve around the extent to which an outside (e.g., Jefferson City) fire department is involved. Four possible arrangements are:

1. Centennial Minerals can supply its own fire protection services on site. It would purchase the necessary fire equipment and arrange the training of its own personnel.
2. The Jefferson City Fire Department can be organized as a fire district and its boundaries extended up to Montana Tunnels where it would provide fire suppression for the company. This option would require the creation of a district plus the addition of special "mine fire equipment" and training of the district's volunteer force.
3. The Jefferson City Fire Department could provide services to Montana Tunnels on a contractual basis. The option eliminates the need to organize a fire district but still requires the addition of fire fighting equipment and the training of manpower.
4. Centennial Minerals can take the lead in providing on-site fire fighting with the Jefferson City department serving as a support unit. This option places the responsibility for

acquiring and maintaining the necessary equipment and training local manpower with the company.

Centennial Minerals' Proposed Plan of Action

Centennial Minerals prefers option #4, listed above, with the company providing on-site fire protection and using the Jefferson City Fire department on a backup basis. To that end, the company proposes to negotiate a contract or memorandum of understanding with the Jefferson City department incorporating, among other things, the following major points:

1. The Jefferson City Fire Department will respond to fire calls made by Centennial Minerals at the mine site.
2. Centennial Minerals' fire suppression unit and the Jefferson City department will train together whenever practical.
3. Centennial Minerals will supervise the combined force of both departments on structure and equipment fires within the mine/mill complex.
4. The Jefferson City Fire Department will be linked with the mine site by radio communication through its dispatch function or officers.

In recognition for the services provided by the Jefferson City Fire Department, Centennial Minerals proposes to make a \$1,000 annual contribution toward its operating expenses. The company also will reimburse the department for equipment and material costs incurred through fire fighting at Centennial Minerals' request.

The Jefferson City Fire Department has the oldest fire fighting equipment among the five Jefferson County departments in the area.

Recognizing the department's need to upgrade its equipment and storage capability to adequately serve both the mine and local residences, Centennial Minerals proposes to provide the department with a garage in which to store its equipment. The existing garage is in the basement of the community hall and is clearly inadequate. Fire department members have expressed an interest in cooperatively developing the new storage facility. As such, the company will either directly provide the department with a metal building of approximately 25 X 40 feet in dimension or provide \$15,000 toward the purchase of building materials. The members of the fire department will erect the structure.

With respect to the Clancy, Montana City, Boulder, and Boulder Valley fire departments, the company proposes:

1. To provide each with a list of equipment the company will make available for use in fighting structure or wildland fires on an as needed basis. Generally, the equipment identified for use in the "fire protection pool" will be things such as water trucks, bulldozers, hand tools, and so forth. This equipment will be available to Jefferson City as well.
2. New homes in Boulder, the Boulder Valley, and Montana City areas will be part of those districts' tax base and subject to property taxation for fire suppression services. Tax receipts from those homes will exceed the marginal cost of providing additional fire protection service. At present, the variable cost associated with adding a new household to a fire protection area is less than \$5.00 annually. Each mill levied against the average value of a new home will raise \$3.21 for a fire district.

It is recognized that mine workers' residences may not be immediately taxed for services received given the structure of the tax assessment process. Also, some of the new residents may not wish to provide donations in support of the local fire departments. Accordingly, Centennial Minerals

will make a \$250, one-time, donation to each "affected" fire department (e.g., Montana City, Clancy, Boulder Valley, and the Town of Boulder) at the start of the construction period to help offset any miscellaneous expenses the departments might incur from mine related households located in their area.

EDUCATION

Preface

In Jefferson County, public education is provided by six elementary and two high school districts. Three elementary districts located at Montana City (#27), Clancy (#1), and Boulder (#7), and the Jefferson High School District #1 (in Boulder) are considered affected jurisdictions for this plan. Figure 4-2 is a map of the Jefferson County school districts.

Description of Existing Conditions

Montana City School District #27: The Montana City School dates back to 1916 when a small, two room stone school house was erected at the school's present site. A new metal building and gymnasium were constructed in 1973; another addition was completed in 1980. The school has 9 classrooms, a library, and physical education and office space in the main building. The old stone school house has been remodeled into three classrooms and is used for classes in music, home economics, industrial arts, and a resource room (tutorial instruction). Seven of the classrooms in the main building measure 23 by 29 feet or better and contain about 667 square feet; two rooms are smaller measuring 20 by 25 feet, containing 500 square feet, and comfortably handle 20 student desks. The school grounds total about three acres including a large playground area behind the south of the school building. The parking area and load/unload zone are north of the

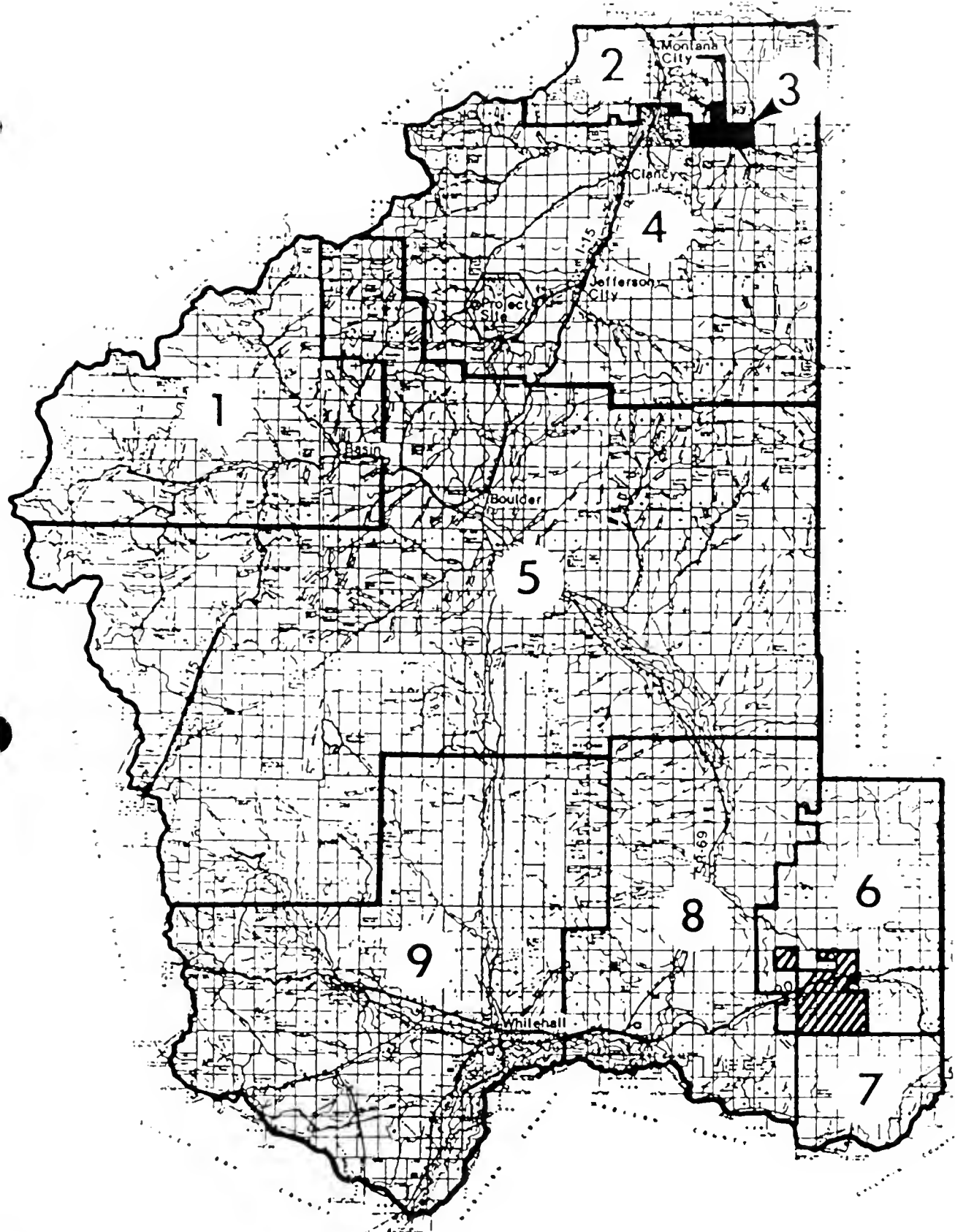


FIGURE 4-2: JEFFERSON COUNTY SCHOOL DISTRICTS

Elementary School Districts

- | | |
|---|--|
| 1 -- Basin #5 | 5 -- Boulder #7 |
| 2 -- Montana City #27 | 6 -- Eureka #26 |
| 3 -- Montana City #27a
(shaded area) | 7 -- Willow Creek #17 |
| 4 -- Clancy #1 | 8 -- Cardwell #16 (includes
hatched area) |
| | 9 -- Whitehall #4 |

High School Districts

- | |
|---------------------|
| 1-5 -- Boulder #1 |
| 6-9 -- Whitehall #2 |

school building with direct access to the Montana City-East Helena road.

The school buildings are well maintained. The new structure has flourescent lighting and carpets throughout. The exterior walls are metal and occasionally experience problems with condensation. The school has four heating systems; two in the main building (one for each wing) one in the gym and one in the old school house.

Montana City has an instructional staff of 13 including four part-time persons who serve as kindergarten, librarian, guidance counselor, and music teachers. It provides instruction for grades K through 3 in self contained classrooms; 4 through 8 grade instruction is departmentalized by subject. The school staff also includes a full-time superintendent/principal, one part-time custodian, and a part-time nurse, school clerk, and secretary. Maintenance and some cleaning is handled on a contract basis with a Helena janitorial firm. The Montana City School participates in the Helena Special Education Cooperative through which it receives services such as audiology, psychology and special education, as needed.

Table 4-17 shows the historical enrollment trend of the Montana City School for the past six years starting with the 1979-1980 school year. The school has experienced a sizable enrollment increase climbing from 88 to 139 students, or 58.0 percent in five years. A kindergarten was added in 1980-81 and accounts for most of the enrollment increase in

TABLE 4-17
ENROLLMENT OF MONTANA CITY ELEMENTARY
SCHOOL DISTRICT #27 BY CLASS, 1979-84

	<u>1979-80</u>	<u>1980-81</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>
Kindergarten	--	15	6	12	10	23
First grade	6	8	13	8	14	13
Second grade	11	9	8	12	10	17
Third grade	12	12	13	9	12	13
Fourth grade	12	14	11	13	8	12
Fifth grade	14	11	15	13	13	11
Sixth grade	<u>10</u>	<u>13</u>	<u>12</u>	<u>17</u>	<u>16</u>	<u>16</u>
Total K-6	65	82	78	84	83	105
Seventh grade	13	12	16	13	18	17
Eighth grade	<u>10</u>	<u>13</u>	<u>12</u>	<u>14</u>	<u>13</u>	<u>17</u>
Total 7 & 8	<u>23</u>	<u>25</u>	<u>28</u>	<u>27</u>	<u>31</u>	<u>34</u>
Total K-8	88	107	106	111	114	139

Source: Montana Office of Public Instruction
Mountain International, Inc.

that year. The school also experienced a large increase of 25 students (21.9 percent) between the current and past school year, principally in the kindergarten and second grades. The increase in Montana City's enrollment during the 1979-84 period largely can be attributed to immigration associated with the development and settlement of rural subdivisions on Saddle Mountain and west of the Montana City highway interchange. Jefferson County's birth rate began to accelerate during the late 1970's and into the 1980's. Children born in 1979 entered kindergarten in the fall of 1984. As such, most of the children born as part of that accelerated birth trend are still pre-schoolers who will enter the education system in subsequent years. Montana City can expect continued increases in its school enrollment.

The Montana City School has space for more students provided a large block does not enter the same grade at the same time. Available physical space and accreditation standards for class sizes established by the State Board of Education are the principal limitations to increased school enrollments. Current minimum accreditation standards limit elementary classes to a maximum of 24 students in kindergarten, 26 students in the first and second grades, 28 students in the third and fourth grades, and 30 students in grades five through eight. Secondary school accreditation standards limit class sizes to 30 students except in instrumental and choral music, physical education, and typing, where classes can be larger. In addition, individual teacher/student loads are limited to a maximum of 160 students except in the areas noted above (Montana Board of Education, 1983).

Montana state building codes currently require 20 square feet of space per occupant in classrooms. The state Department of Health and Environmental Sciences requires 15 square feet of floor space and 200 cubic feet of volume for each student in a classroom (ARM 16.10.1103, 1983).

Based on accreditation standards alone, the existing elementary classroom configuration could accomodate 89 additional students in grades K through 6 and 26 more students in grades 7 and 8. Most of the available student space is in grades 3 through 7; the kindergarten is full. As a practical matter, two classrooms in the Montana City School are small and could not be filled to the accreditation enrollment limit. Also, to facilitate maximum management flexibility, it is desireable to keep a few vacant student spaces in each class to accomodate student transfers. Accordingly, an elementary enrollment increase of 80 students either by natural increase, in-migration, or both would push the elementary school to its functional capacity.

The Montana City School does not operate a bus transportation system. Some children walk to school but most are transported by their parents or ride in "neighborhood" car pools. Almost all of the Montana City's eighth grade graduates go on to high school in Helena even through the Montana City area is part of the Jefferson (Boulder) High School District. The Boulder district, in turn, makes an annual tuition payment to the Helena High School District for educating Montana City's youth (Penny Koke, pers. comm., January 23, 1985).

Clancy Elementary District #1: The Clancy Elementary School is organized like a small college campus. The school grounds total approximately 10 acres and contain four school buildings. The original Clancy School was built in 1907. It is a brick/stucco structure with a concrete and rubble foundation. The original building had two classrooms. In the 1930's a small auditorium was built but was subsequently converted to two classrooms. A third addition of two classrooms was added in the 1950's or early 1960's. The original building also houses the school lunchroom in its basement and the district's administrative offices. Grades two through four are housed in the building.

The school gymnasium, a metal building on a concrete slab, was erected in the late 1950's. The building has a stage on its west end and is used as the school auditorium as well as the physical education facility. A woodframe building containing three classrooms is located immediately to the west of the gym and houses the district's kindergarten and first grade. The building formerly served as the school for the old Claysoil School District, northeast of Clancy. The district was merged with the Clancy district in the late 1960's, the school building was moved to its present site where it was placed on a foundation and rehabilitated. The "upper grade" building housing grades four (one section) through eight is located on the far west end of the school grounds. It was built in two sections, the first in 1974 and second in 1978. Each section is 70 by 100 feet in dimension. The building contains nine classrooms and a library. The building has a

metal frame and siding with a masonry facade in places. The floors are carpeted; the walls have a paneled wainscoting. Florescent lighting fixtures are used throughout the building. The "upper grade" building has the home economics and science laboratory. Industrial arts are not offered by the Clancy School District.

Each of the school's buildings has its own heating system; all are fired by natural gas. Water is pumped from two wells on the school property and sewage disposed of through two septic tanks and drain fields. A large playground and athletic field are located between the "upper grade" building and the original school.

The condition of the Clancy School structures is quite variable. The "upper grade" building is new and in a good state of repair. Likewise, the gymnasium appears to be in good, serviceable condition. The first grade (white building) is a woodframe structure that is approaching the end of its functional life. The original school building is a solid structure but, it too will need to be replaced. The roof is deteriorating and there are moisture problems in parts of the basement. The cafeteria area is small; kitchen and dining equipment are closely packed together. There also is little storage space available for the kitchen or, generally, in the entire building.

The Clancy School employs 19 full-time teachers, there is one kindergarten teacher with two classroom sections. Five teachers handle the 7th and 8th grades on a departmentalized basis. Grades 1 through 6

are taught in self contained classrooms, two sections per grade. Special education services are received through the Helena Cooperative. The school also employs nine and one-half support personnel (cooks, aides, custodians) and three bus drivers.

Bus transportation is provided on three routes. There is a 59 mile round-trip route to Jefferson City, Corbin and Wickes that hauls about 50 children each day. A second route serves the Lump Gulch area northwest of Clancy. It carries around 25 children. The Blue Sky Heights/Forest Park (subdivisions) route runs north of Clancy and transports about 70 children per day.

Table 4-18 shows the enrollment trend for the Clancy School District since 1979. The total enrollment has increased from 273 to 313 students (14.6 percent) in a gradual step by step basis. The different grades currently range in size from 30 to 41 students. Most eighth grade graduates go on to high school in Boulder.

Based upon existing accreditation standards and the structural configuration of the building, the Clancy School could accomodate another 141 students in grades K-6 and 50 more pupils in the 7th and 8th grade classes, or 191 students in total. Assuming some space is left vacant to management purposes, a total enrollment increase of 140 to 150 students would push the school to its functional capacity. The greatest amount of classroom space currently is available in grades 3 through 5; the kindergarten sections have the

TABLE 4-18
ENROLLMENT OF CLANCY ELEMENTARY
SCHOOL DISTRICT #1 BY CLASS, 1979-84

	<u>1979-80</u>	<u>1980-81</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>
Kindergarten	--	18	24	29	33	38
First grade	36	35	22	31	34	37
Second grade	22	31	35	29	29	35
Third grade	37	26	40	28	31	30
Fourth grade	45	38	28	38	27	30
Fifth grade	33	41	37	27	40	32
Sixth grade	35	34	43	35	31	41
Total K-6	208	223	229	217	225	243
Seventh grade	30	29	42	42	35	30
Eighth grade	35	34	30	41	47	40
Total 7 & 8	65	63	72	83	82	70
Total K-8	273	286	301	300	307	313

Source: Montana Office of Public Instruction
Mountain International, Inc.

fewest openings. Given Jefferson County's increased birthrate and continued residential development in the Clancy area, the school system can reasonably expect steady increases in enrollment during the next few years (Don King, pers. comm., August 1, 1984).

Boulder Elementary District #7 and High School District #1: The

Boulder Elementary School District is a masonry structure near the center of the Town of Boulder. The original building was constructed in 1924. The south wing was added in 1958, the east wing in 1974 and north wing in 1978. In total, the building contains 14 classrooms, a library, and a multi-purpose room. There is about an acre of playground space at the elementary school.

The school is staffed with 14.25 academic teachers supported by part-time assistance in the library and Title I program. There is one full-time special education teacher. Boulder participates in the Education Specialist's Consortium consisting of Jefferson, Meagher, and Broadwater counties. The consortium has a psychologist and speech therapist based in Boulder.

Grades K-6 are taught in self contained classes. Instruction for 7th and 8th graders is departmentalized and some classes are held in the high school buildings. The elementary school does not have its own gymnasium.

The Boulder High School operates from three buildings adjacent the Boulder River School and Hospital near the east side of town and about three blocks from the elementary school. The original high school building is a three story, brick structure built in 1909. It contains eight classrooms, a library, and study hall. The building is functionally obsolete and does not meet current fire codes. At the November 1984 general election, the high school district's voters approved a bond issue to replace the original building. The new building will be a single story structure added on to a building erected in 1974. It is scheduled for completion in 1986.

The high school's second academic building was constructed in 1974. It is a single story masonry structure with eight classrooms, and it is in excellent condition. The school's gymnasium was built in 1954. It is a concrete brick building, in good condition but, perhaps, a little small for the enrollment it handles. The high school is staffed by a full-time principal, 19 teachers, and four support personnel.

The Boulder School District operates six bus routes. Three routes haul high school students from the north end of Jefferson County (Clancy, Pinecrest, Montana City) to Boulder. Those routes collectively transport slightly over 100 students. Three bus routes serving Basin, the Elk Park area south of Basin, and the Boulder Valley are contracted from private vendors. The Basin bus transports about 30 to 35 students, 16 come to Boulder from Elk Park, and around 40 students travel in from the Boulder Valley. The Boulder schools do not

currently have a cafeteria. The hot lunch program is operated out of a rented room in the basement of the Valley Apartments across the street from the Boulder High School.

Table 4-19 shows the enrollment trend from 1979 through 1984 for both the Boulder Elementary and High School Districts. The enrollment in grades K-6 has fluctuated between 178 and 206 students. In the last three years, the school has declined 28 students or (13.5 percent). The 1984 enrollment differs from the 1978 level by only four students. The junior high grades have been fairly stable during the past six years, fluctuating between 51 and 60 children. The high school enrollment has consistently declined since 1979. The 210 pupils attending school now represent a 13.6 percent decrease from the 243 students in school six years ago. In total, the two Boulder school districts have experienced a 7.4 percent enrollment decrease from 476 to 441 students during the past six years.

Boulder currently operates two classroom sections in the second and seventh grades; the remaining elementary grades have one section each. That configuration would allow the maximum addition of four to five students per class except in grades two and seven where 19 and 33 more students theoretically could be accommodated. The school superintendent estimates that 25 to 30 new elementary students could be accommodated without difficulty or additional staff; another 50 students could be added to the high school under those constraints as

TABLE 4-19

ENROLLMENT OF BOULDER ELEMENTARY SCHOOL DISTRICT #7
AND JEFFERSON HIGH SCHOOL DISTRICT #7 BY CLASS, 1979-84

	<u>1979-80</u>	<u>1980-81</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>
Kindergarten	28	26	23	35	30	26
First grade	26	24	28	26	30	25
Second Grade	24	29	21	24	27	33
Third grade	28	36	31	24	19	24
Fourth grade	28	29	31	34	22	21
Fifth grade	24	29	31	28	33	24
Sixth grade	24	28	25	34	34	25
Special education	0	0	1	1	1	0
Total K-6	182	201	191	206	196	178
Seventh grade	26	23	32	27	33	27
Eighth grade	25	30	28	26	22	26
Total 7 & 8	51	58	60	52	55	53
Total K-8	233	259	251	258	251	231
Ninth grade	68	56	56	59	54	60
Tenth grade	66	61	56	58	54	46
Eleventh grade	55	63	55	57	53	51
Twelfth grade	54	47	58	49	48	53
Special education	0	0	3	3	2	0
Total 9-12	243	227	228	226	211	210
Total all grades	476	486	479	484	462	441

Source: Montana Office of Public Instruction
Mountain International, Inc.

well (Robert Laumeyer; Joan Sampson, pers. comm., August 17 & October 10, 1984).

The Potential Impact of the Montana Tunnels Project

The Montana Tunnels Project will impact Jefferson County's school districts in two ways:

1. The project will cause school enrollments to increase very slightly;
2. The project will increase tax and non-tax revenues received by the school districts and, moreover, will do it in amount substantially greater than the additional cost of educating the new mine related pupils.

Table 4-20 shows the projected population of school aged children by school district for the constuction and operational periods of the mine. During construction the Clancy district is forecast to receive between four and 14 new students with an average seven children. In the operational phase, the number of immigrant mine related children range from five to eight. The Boulder elementary district is projected to receive from three to 14 new immigrant children during the construction period but only one pupil thereafter during mine operations. The Montana City school district is not expected to receive new mine related students during the construction phase; from three to five children are forecast to be new immigrant students once the project goes into production. The Jefferson high school district is projected to average five new students during the construction period and have from four to six mine related pupils during operations.

TABLE 4-20

PROJECTED POPULATION OF SCHOOL AGED CHILDREN BY SCHOOL DISTRICT

	<u>1st Otr</u>	<u>2nd Otr</u>	<u>3rd Otr</u>	<u>4th Otr</u>	<u>5th Otr</u>	<u>Years 1-3</u>	<u>Years 4 Plus</u>
<u>Jefferson County</u>							
Clancy Elem. Dist. #1:							
Construction	4	4	6	14	5	0	0
Operations	0	0	0	0	0	5	8
	<u>4</u>	<u>4</u>	<u>6</u>	<u>14</u>	<u>5</u>	<u>5</u>	<u>8</u>
Boulder Elem. Dist. #7:							
Construction	3	3	6	14	5	0	0
Operations	0	0	0	0	0	1	1
	<u>3</u>	<u>3</u>	<u>6</u>	<u>14</u>	<u>5</u>	<u>1</u>	<u>1</u>
Montana City Elem. Dist. #27:							
Construction	0	0	0	0	0	0	0
Operations	0	0	0	0	0	3	5
	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>3</u>	<u>5</u>
Jefferson County High Sch. Dist. #1:							
Construction	3	3	2	13	5	0	0
Operations	0	0	0	0	0	4	6
	<u>3</u>	<u>3</u>	<u>2</u>	<u>13</u>	<u>5</u>	<u>4</u>	<u>6</u>
Total Jefferson County:	10	10	18	41	15	13	20

Source: Mountain International, Inc.

The Jefferson County schools vary considerably in their capacity to absorb new students but each has plenty of room for the number of new mine related pupils expected to accompany the Montana Tunnels development. The districts also vary in terms of their potential to grow from sources other than Montana Tunnels. The Montana City and Clancy School Districts have grown rapidly in the recent past and are expected to continue doing so over the next five years. Both districts continue to experience subdivision development and the immigration of persons from Lewis and Clark County or, at least, people who work in the Helena area. During the past five to seven years, Jefferson County's birth rate substantially increased. Children born during that period are disproportionately located in northern Jefferson County and they have started to enter school. Over the next several years, the Montana City and Clancy school districts will experience successively larger kindergarten and first grade enrollments. The smaller classes that are currently enrolled in grade school will graduate and their places will be taken by the larger classes following in their wake. Table 4-21 shows the projected baseline enrollment for each of the school districts being considered in this plan. The baseline enrollment is the number of students that are forecast to be in school without the Montana Tunnels project being built. To that amount, the mine's enrollment is added to reach the total number of pupils.

By 1990, Montana City is projected to have an enrollment of 207 students, a 48.9 percent increase over the 139 students currently registered. Montana Tunnels will add three to five students on top of

TABLE 4-21

PROJECTED BASELINE AND MINE RELATED SCHOOL ENROLLMENTS
BY YEAR FOR JEFFERSON COUNTY SCHOOL DISTRICTS

	Current Year	-----Projected-----				
	<u>1984-85</u>	<u>1985-86</u>	<u>1986-87</u>	<u>1987-88</u>	<u>1988-89</u>	<u>1989-90</u>
<u>Montana City Elementary District #27</u>						
Baseline enrollment ¹	139	153	167	178	193	207
Mine enrollment	--	0	3	3	3	5
Total enrollment	139	153	170	181	196	212
<u>Clancy Elementary District #1</u>						
Baseline enrollment ¹	313	328	349	347	359	374
Mine enrollment	--	7	5	5	5	8
Total enrollment	313	335	354	352	364	382
<u>Boulder Elementary District #7</u>						
Baseline enrollment	231	237	243	243	251	260
Mine enrollment	--	5	1	1	1	1
Total enrollment	231	241	244	244	252	261
<u>Jefferson High School District #1</u>						
Baseline enrollment	210	206	201	209	199	187
Mine enrollment	--	5	4	4	4	6
Total enrollment	210	211	205	213	203	193

¹ Average of high and low composite enrollment projections. See Appendix B.

Source: Office of the Superintendent of Public Instruction
Mountain International, Inc.

that number. In total, the mine will account for less than 2.5 percent of the Montana City students by 1990. Clancy will have a similar experience. The baseline enrollment without Montana Tunnels will increase from 313 to 374 students or, 19.5 percent. The mine will add five to eight more students and constitute 2.1 percent of total enrollment in 1990. Both Montana City and Clancy need to consider building new classroom space. The need is not immediate given current class sizes but new or expanded facilities should start coming on line by 1989-90. Those two districts will need additional classroom space by then irregardless of whether Montana Tunnels is built. The mine/mill will not "overcrowd" either school. Through property tax payments and increased Foundation Program payments, Montana Tunnels will directly and indirectly assist both school districts. The project's revenue impact on Clancy will be exceptional and will help pay for the cost of building and/or operating a larger educational program that will be needed in the near future.

The Boulder elementary district also is forecast to increase in size but at a much lower rate than in either Montana City or Clancy. The Boulder district is projected to receive 30 additional students by 1990 of which one will be related to mine development. Boulder can accommodate the forecast level of growth in the existing school building although changes in the district's classroom configuration may require the addition of a teacher or two. Boulder has the largest number of students per classroom and, therefore, has less capacity to absorb new students than either Montana City or Clancy.

The Jefferson High School District in Boulder is forecast to continue losing enrollment. The baseline forecast predicts a 23 student loss by 1990, although the Montana Tunnels Project will add back four to six pupils. The high school will have ample physical plant and teaching staff available to accommodate children whose families are associated with Montana Tunnels.

The baseline enrollment estimates presented here are an average of a high and low forecast derived using two different cohort survival-retention rate projection models. The appendix contains the projections by grade and year for each school district. A composite projection was developed for Montana City and Clancy by averaging the results of the two projection techniques shown in the appendix.

Table 4-22 shows the estimated costs and non-tax revenues each school district will experience as a result of Montana Tunnels. Each district will receive additional Foundation and Permissive payments for each mine related student enrolled. Each district also will experience an increase in costs to educate the children. Given the available resources of the districts, cost increases will be limited to variable expense items (e.g., consumable supplies) unless a particular child requires a special program of education. During fiscal years 1986 and 1987, the schools will experience small cost increases before Foundation payments are received. Foundation Program payments are based on the previous year's enrollment and, thus, lag one year behind costs. Except for the first project year (i.e., the construction

TABLE 4-22

ESTIMATED SCHOOL DISTRICT NON-TAX REVENUES AND EXPENDITURES
RESULTING FROM THE MONTANA TUNNELS DEVELOPMENT, 1985-1990

	Current Year	-----Projected-----				
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
<u>Montana City Elementary</u>						
<u>District #27</u>						
Total enrollment	139	153	170	181	196	212
Mine related enrollment	NA	0	3	3	3	5
Baseline enrollment	139	153	167	178	193	207
Projected non-tax revenue related to mine development ¹	NA	0	0	\$5,610	\$5,874	\$6,147
Projected increase in operating expenditures ²	NA	0	\$1,305	1,377	1,455	2,580
Difference	NA	0	(\$1,305)	\$4,233	\$4,419	\$3,567
<u>Clancy Elementary District #1</u>						
<u>Total enrollment</u>	313	335	354	352	364	382
Mine related enrollment	NA	7	5	5	5	8
Baseline enrollment	313	328	349	347	359	374
Projected non-tax revenue related to mine development ¹	NA	0	\$10,780	\$8,120	\$8,595	\$9,130
Projected increase in operating expenditures ²	NA	\$1,106	830	875	925	1,576
Difference	NA	(\$1,106)	\$ 9,674	\$7,245	\$7,670	\$7,554

TABLE 4-22

ESTIMATED SCHOOL DISTRICT NON-TAX REVENUES AND EXPENDITURES
RESULTING FROM THE MOUNTAIN TUNNELS DEVELOPMENT, 1985-1990 (CONTINUED)

	Current Year	-----Projected-----				
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Boulder Elementary District #7						
Total enrollment	231	241	244	244	252	261
Mine related enrollment	NA	5				
Baseline enrollment	231	237	243	243	251	260
Projected non-tax revenue related to mine development ¹	NA	0	\$8,235	\$1,731	\$1,832	\$1,930
Projected increase in operating expenditures ²	NA	(\$1,110)	233	246	260	276
Difference	NA	(\$1,110)	\$8,002	\$1,485	\$1,572	\$1,654
Jefferson High School District #1						
Total enrollment	210	211	205	213	364	193
Mine related enrollment	NA	5	4	4	5	6
Baseline enrollment	210	206	201	209	359	187
Projected non-tax revenue related to mine development ¹	NA	0	\$12,055	\$10,232	\$10,744	\$11,528
Projected increase in operating expenditures ²	NA	\$2,190	1,844	1,944	2,060	3,282
Difference	NA	(\$2,190)	\$10,211	\$8,288	\$8,684	\$8,246

¹ State School Foundation and Permissive payments: Payments lag one year behind enrollment. Derived on a per student basis.

² Variable costs inflated per assumptions in section three. No lag. Derived on a per student basis.

Source: Office of the Superintendent of Public Instruction
Mountain International, Inc.

period), non-tax revenues will greatly exceed increased costs. Montana City, for example, is projected to expend a total of \$6,717 over the next five years educating mine related children. That compares with \$17,631 of new non-tax revenue the children's attendance will bring to the district. For Clancy, the relative burden of cost is estimated to be \$5,312 versus new non-tax revenues of \$36,625, or a \$31,313 benefit to the district. In the Boulder elementary district, mine related costs are forecast at \$2,125 to be offset by new revenues of \$13,728. The Jefferson High School District likely will expend \$11,320 and receive back \$44,559.

Table 4-23 shows the relative ratio of new non-tax revenue and student costs on a per pupil basis for each school district under consideration. Montana City spends more than the other districts on per pupil variable expenses and, therefore, shows the lowest dollar amount of revenue in excess of costs, \$1,485. In the high school, revenues per new student will average \$2,154 more than costs.

The fourth and fifth column of Table 4-23 also shows "net operating expense to local district" and the year when the net cost will occur. Those dollar amounts are derived from the first year of the Montana Tunnels project before Foundation payments are received and reflect an estimated out-of-pocket expenditure by the school districts. Under the provisions of the Hard Rock Impact Mitigation Act, Centennial Minerals is obligated to pay those costs and will do so.

TABLE 4-23
NON-TAX REVENUE AND EXPENDITURE COMPARISON
IN JEFFERSON COUNTY SCHOOL DISTRICTS, 1985-1990

<u>School District</u>	<u>Estimated Average Non-Tax Received Per New Mine Student</u>	<u>Estimated Average Costs Per New Mine Student</u>	<u>Excess of Non-Tax Revenues Over Costs</u>	<u>Net Operating Expense to Local Districts</u>	<u>Year Occuring</u>
Montana City Elementary District #27	\$1,959	\$474	\$1,485	\$1,305	FY 1985-86
Clancy Elementary District #1	\$1,677	\$176	\$1,501	\$1,106	FY 1985-86
Boulder Elementary District #7	\$1,785	\$247	\$1,538	\$1,110	FY 1985-86
Jefferson (Boulder) High School District #1	\$2,634	\$489	\$2,154	\$2,190	FY 1985-86

Source: Mountain International, Inc.

The final table, 4-24, shows the projected impact of the Montana Tunnels Project on the taxable values of the Clancy elementary and Jefferson high school districts where the project is actually located. Property tax payments will not begin under FY 1987-88 given the length of the construction period and lag times involved in the Montana property assessment process. The table contains a baseline projection of each district's taxable value without mine development. That projection was based on the annual rate of change experienced during the past five years. Taxable values for mine plant and equipment and the gross proceeds of mineral production have been added on top of the baseline amounts. The table assumes a "worst case" valuation. Plant and equipment values are set at the 3 percent level as new industrial property for the first three years and metal prices are assumed to be low. Refer back to Tables 3-11 through 3-13 for additional detail.

Once in operation, Montana Tunnels will become the largest taxpayer in Jefferson County. The value of its property will raise the total taxable valuation of the county, Clancy elementary, and Jefferson high school districts by \$1.7 to \$6.3 million dollars between 1988 and 1991. The mine will constitute between 60 and 70 percent of the Clancy school district's taxable value and from 25 to 33 percent of the high school's valuation, starting in 1989.

Alternatives for Mitigating Adverse Impact

The impact of the Montana Tunnels Project on local school districts will be fundamentally positive. The company will pay each district

TABLE 4-24

PROJECTED IMPACT OF MONTANA TUNNELS PROJECT ON THE TAXABLE
VALUES OF THE CLANCY ELEMENTARY AND JEFFERSON (BOULDER) HIGH SCHOOL DISTRICTS

<u>Clancy Elementary School District #1</u>	<u>Current Year 1984-85</u>	<u>-----Projected-----</u>			
		<u>1985-86</u>	<u>1986-87</u>	<u>1987-88</u>	<u>1988-89</u> <u>1989-90</u>
Baseline taxable value	\$2,208,009	\$2,299,939	\$2,395,697	\$2,495,357	\$2,599,164 \$2,707,289
Taxable value of mine, plant and equipment ¹	NA	-0-	(footnote 2)	1,679,113	1,553,180 1,320,203 ⁴
Taxable value of gross proceeds of ³ mineral production	NA	-0-	-0-	-0-	2,357,500 2,357,500
Total district taxable value	\$2,208,009	\$2,299,939	\$2,359,697	\$4,174,470	\$6,509,844 \$6,384,992
Montana Tunnels as share of total taxable value	NA	-0-	-0-	40.2%	60.0% 57.6%
<u>Jefferson (Boulder) High School District #1</u>					
Baseline taxable value	\$10,342,556	\$10,650,764	\$10,968,157	\$11,295,008	\$11,631,599 \$11,978,221
Taxable value of mine, plant and equipment ¹	NA	-0-	(footnote 2)	1,679,113	1,553,180 1,320,203 ⁴
Taxable value of gross proceeds of ³ mineral production	NA	-0-	-0-	-0-	2,357,500 2,357,500
Total district taxable value	\$10,342,556	\$10,650,764	\$10,968,157	\$12,974,121	\$15,542,279 \$15,655,924

TABLE 4-24

PROJECTED IMPACT OF MONTANA TUNNELS PROJECT ON THE TAXABLE
VALUES OF THE CLANCY ELEMENTARY AND JEFFERSON (BOULDER) HIGH SCHOOL DISTRICTS (CONTINUED)

	Current Year <u>1984-85</u>	-----Projected-----			
		<u>1985-86</u>	<u>1986-87</u>	<u>1987-88</u>	<u>1988-89</u> <u>1989-90</u>
Montana Tunnels as share of total taxable value	NA	-0-	-0-	12.9%	25.2% 23.5%

¹ Assumes mine will be classified as new industrial property during first three years of production. Value depreciated per worst case situation on Table 3-13.

² Construction equipment on site to erect plant will be taxed in Jefferson County. Value unknown at this time.

³ Assumes worst case situation. See Table 3-13.

⁴ In 1990-91 the taxable value of mine plant and equipment will increase to \$3,919,500. At that time, Montana Tunnels will constitute approximately 69 percent of the tax base in the Clancy School District and 34 percent in the Jefferson High School District.

Source: Mountain International, Inc.

for the amount of forecast revenue shortfall during the initial year of project development but, otherwise, there appears to be little prospect of adverse impact. No alternatives appear necessary.

Centennial Minerals' Proposed Plan of Action

With respect to the Jefferson County school districts, Centennial proposes to:

1. Provide payment for the projected revenue shortfall each district is likely to experience in the first year of project development as follows:

- Montana City Elementary District #27	<u>\$1,305.00</u>
- Clancy Elementary District #1	<u>\$1,106.00</u>
- Boulder Elementary District #7	<u>\$1,110.00</u>
- Jefferson High School District #1	<u>\$2,190.00</u>

Payments will be made within 30 days of the start of project construction. The payments are to be considered tax prepayments against which the company will claim a future tax credit if applicable.

2. Should any school district experience the in-migration of a developmentally disabled or handicapped child whose parent/guardian is employed by Centennial Minerals, the company will pay the district for the cost of the child's education adjusted for state/federal payments to the district for such purposes until the mine's property is entered on the local tax rolls.
3. It is Centennial Mineral's company policy to be actively involved in and support community activities. Montana Tunnels will support charitable activities and community affairs in the local area. Periodically, the community and schools will receive special donations of equipment, materials, and supplies from the company. In the past, the company has donated manpower and equipment for special projects conducted either by the schools, non-sectarian/non-partisan civic groups, and units of local government. That policy will be in effect at Montana Tunnels as well. The project manager will oversee the company's participation in and support of community affairs.

4. In the event that the addition of a mine related pupil to a classroom raises the classroom enrollment to within two students of the accreditation maximum allowed by law (i.e., reach the recommended standard), Centennial Minerals will pay the full cost of hiring an instructional aide or one-half of the cost of hiring a new teacher should the school board decide to split the class into two or more sections. Such funds will be provided until the project has been placed on the tax rolls, subject to annual review and discontinuation if circumstances change.

AMENDMENTS TO THE PLAN

This section includes amendments to the plan mutually agreed to by Centennial Minerals Inc. and the affected local jurisdictions of Jefferson County, Montana. All such amendments will have been negotiated during the Plan's formal review pursuant to Section 90-6-307 MCA, commencing July 8, 1985.

AMENDMENT 1: DEFINITIONS AND PRINCIPLES

EXPLANATION:

A series of definitions and principles were added to the Impact Plan to guide future interpretation and implementation of the Plan.

CONTENT:

Definitions

Affected Jurisdiction means Jefferson County, the Town of Boulder, Jefferson High School District #1, Clancy Elementary School District #1, Boulder Elementary School District #7, Montana School District #27, Jefferson County Solid Waste District, Montana City Rural Fire District, and Boulder Valley Rural Fire District.

Centennial Minerals means Centennial Minerals, Ltd., Vancouver, British Columbia; Centennial Minerals, Inc., Helena, Montana; U.S. Minerals Exploration Company (USMX), Denver, Colorado; the owners and developers of the Montana Tunnels Project, or successor owners of the project.

Impact Assistance means all monetary and non-monetary commitments of Centennial Minerals as contained in Section 4 of the Montana Tunnels Project Hard Rock Mine Impact Mitigation Plan for Jefferson County, Montana as amended and approved by affected jurisdictions per the provisions of 90-6-301 et seq. MCA.

Impact Assistance Contingency Fund means a fund of \$10,000.00 established by Centennial Minerals under the control of the Jefferson County Commission as provided in the Plan. The fund shall be used to provide additional impact assistance payments to address problems or pay

costs caused by in-migrant mine employees and their families not anticipated by the Plan at the time it was approved. Eligible applicants for funds include all affected jurisdictions of Jefferson County including the several departments of county government, the Jefferson City Volunteer Fire Department, Clancy Quick Response Unit, Clancy Volunteer Fire Department, and Boulder Volunteer Ambulance.

Impact Period means the time period commencing sixty days prior to the start of construction at the Montana Tunnels Project site and continuing until the Montana Tunnels Project has paid its first property tax assessment following the start of commercial mining operations.

In-migrant Mine Employee means any employee of Centennial Minerals, its contractors, and subcontractors who did not reside in the affected jurisdiction for a six-month period prior to being hired by Centennial Minerals.

In-migrant Mine Employee Family means the spouse, children, wards, relatives and other unrelated individuals who continually reside with an in-migrant mine employee and thereby constitute a single household.

In-migrant Mine Employee Student means the child or ward of a person defined as in-migrant mine employee.

Montana Tunnels Property (and/or Project) means all real and personal property owned by Centennial Minerals in conjunction with the development, operation, and support of a proposed metallic mineral mine and processing facility in Jefferson County, Montana.

Plan means the Montana Tunnels Project Hard Rock Mine Impact Mitigation Plan for Jefferson County, Montana, as amended and approved per 90-6-301 et seq. MCA.

Principles

1. Centennial Minerals shall provide impact assistance to affected jurisdictions of Jefferson County for the increased costs of providing governmental services incurred during the impact period and created by in-migrant mine employees and their families.
2. Unless otherwise specified in the Plan, all monetary payments of impact assistance made by Centennial Minerals shall be considered tax prepayments for which Centennial Minerals is entitled to claim a tax credit from tax assessments subsequently levied against the Montana Tunnels Property. If, after seven years from the start of commercial mining operations, Centennial Minerals does not own property in an affected jurisdiction against which tax credits may be claimed, all prior impact assistance payments will be considered donations.

AMENDMENT 2: IMPACT ASSISTANCE CONTINGENCY FUND

EXPLANATION:

Centennial Minerals agreed to establish a \$10,000 contingency fund under the supervision of the Jefferson County Commission to provide assistance for small impacts not envisioned when the plan was prepared in lieu of going through a procedure to formally amend the Plan for a minor matter. The amendment constitutes a new addition to the Impact Plan.

CONTENT:

Impact Assistance Contingency Fund

During the impact period, Centennial Minerals will establish a \$10,000 contingency fund to address problems or pay costs caused by in-migrant mine employees and their families not anticipated by the Plan at the time it was approved. The Jefferson County Commission shall administer the fund and make such disbursements as necessary to eligible applicants. To process and judge the merit of applications requesting assistance from the fund, the Commission shall adopt application procedures and evaluation criteria consistent with the definitions and principles of the Plan. Centennial Minerals will make payment(s) for the fund as requested by the Commission. The fund will be maintained in the Jefferson County Treasury until disbursed to a qualifying applicant. In the event the fund is depleted, it may be replenished by the mutual consent of Jefferson County and Centennial Minerals.

AMENDMENT 3: LOCAL STREETS AND ROADS

EXPLANATION:

Centennial Minerals and Jefferson County negotiated a series of substantive changes to the Impact Plan as submitted July 8, 1985. The amended language replaces Centennial's commitment in the original document as follows:

The content of the section entitled Centennial Minerals' Proposed Plan of Action extending from pages 133 through 136 exclusive of the section entitled Related Commitments shall be stricken in its entirety and replaced by the language below.

CONTENT:

County Road Construction and Maintenance

1. Centennial Minerals will petition Jefferson County to abandon the existing county road near Wickes north of the Wood Chute Creek turnoff to the Montana Tunnels Project site. The county will initiate abandonment proceedings as provided by law upon receipt of the petition. The road will continue in public use until Centennial Minerals receives a mine operating permit from the Montana Department of State Lands.
2. Centennial Minerals will pay the full cost of improving the existing county road connecting Jefferson City, Corbin, and Wickes. Such improvements include one-way in/out access and paving at Jefferson City, constructing a bypass around Corbin, and generally straightening and leveling the road between Jefferson City and the Centennial Ranch. The estimated cost of such improvements is \$231,000 as specified below:

- Developing one-way, in/out access and paving at Jefferson City	\$ 95,000
- Constructing bypass around Corbin	75,000
- Straightening/leveling roadway between Jefferson City and Centennial Ranch	<u>61,000</u>
Total	\$231,000

Fifty thousand dollars (\$50,000) of the total amount spent by Centennial Minerals for improvements to the existing Jefferson City-Corbin-Wickes county road will be a tax prepayment for which the company is entitled to claim a tax credit at the conclusion of the impact period. All funds expended in excess of \$50,000 for improving the existing county road will be considered a grant or donation to Jefferson County.

3. Jefferson County will continue to maintain the existing county road connecting Jefferson City, Corbin, and Wickes. Jefferson County further agrees to provide a level of road maintenance sufficient to keep the road open and serviceable to existing residents of the area and all mine-related traffic.

During the impact period, Centennial Minerals will pay Jefferson County an amount equal to \$1,250 per month (\$15,000 per annum) for road maintenance services. Such payments will be made quarterly in advance of service delivery. All payments for road maintenance will be tax prepayments for which Centennial will be entitled to claim a tax credit at the conclusion of the impact period.

4. Tax prepayments for road construction (\$50,000) and road maintenance will be summed to determine the total amount of tax credit due Centennial Minerals. Tax credits will be limited to \$10,000 per year, or 15 percent of the total prepayment, whichever is greater. Centennial Minerals will be eligible to receive tax credits during the second fiscal year of commercial mining operations. Jefferson County shall specify which fund or funds in the county treasury the tax credits shall be charged against.
5. Centennial Minerals will build a new road across its property from the Centennial Ranch to the Montana Tunnels Project site. The road will be for the private use of project employees, contractors, and vendors doing business with Centennial Minerals or its contractors. The road also will be open to governmental personnel in the conduct of official business, and to private landowners with property on top of Alta Mountain or adjacent to the Montana Tunnels' Project site.

Centennial Minerals will construct and maintain the proposed new road until the Montana Tunnels property is abandoned or as otherwise negotiated with Jefferson County. Centennial Minerals will bear all costs for constructing and maintaining the proposed new road. No tax prepayment will be made or tax credit subsequently offered for this section of road.
6. When Centennial Minerals closes and abandons the Montana Tunnels Project, the company will grant Jefferson County title to the project access road described in Item #5, above.
7. Public access to the upper Clancy Creek area, Gregory Mine area, or top of Alta Mountain will be via the Clancy Creek Road or the road from Corbin under the railroad trestle. The general public will not use Centennial Minerals' private road to the project site, except by company permission.

AMENDMENT 4: LAW ENFORCEMENT

EXPLANATION:

Centennial Minerals and Jefferson County negotiated a series of substantive changes to the Impact Plan as submitted July 8, 1985. The amended language replaces Centennial Minerals' commitment in the original document as follows:

The numbered paragraphs 1 and 2 on pages 147 and 148 shall be stricken in their entirety and replaced by the language below.

CONTENT:

County Law Enforcement Services

1. Centennial Minerals will provide Jefferson County with \$18,000 for the purchase of new communications equipment to upgrade the sheriff's department's communication system. Per a priority listing of equipment needs provided by the sheriff, the equipment to be purchased and its estimated cost is listed below.

- VHF mobile relay (located in Saddle Mountain area)	\$ 4,300
- Two-channel, two-receiver control station at Boulder radio site	4,400
- Three VHF mobile radios for patrol vehicles at \$1,600 each	4,800
- Three VHF portable radios for law enforcement officers at \$1,500 each	<u>4,500</u>
Total	\$18,000

Payment will be made in a lump sum within 30 days of Centennial Minerals commencing construction of the Montana Tunnels Project or, as subsequently requested by the county. The funds identified above will be a one-time donation.

2. As requested by the County Sheriff, Centennial Minerals will augment the Jefferson County Sheriff's Reserve by committing the company's security staff as special duty deputies for use by the Sheriff's Department on an as needed basis. This action presupposes that such staff only would be used for functions such as search and rescue or general peacekeeping during special events (i.e., rodeos) when the department needs additional manpower on a limited basis. While serving as special duty deputies, Centennial Minerals employees will be under the direct supervision of the County Sheriff and are the agents of Jefferson County, not of Centennial Minerals.

AMENDMENT 5: SOLID WASTE MANAGEMENT

EXPLANATION:

Centennial Minerals and the Jefferson County Solid Waste District negotiated some minor changes to the Impact Plan as submitted July 8,

1985. The amended language replaces Centennial Minerals' commitment in the original document as follows:

The numbered paragraphs 1 through 4 on page 153 shall be stricken in their entirety and replaced by the language below.

CONTENT:

1. Centennial Minerals will establish a private landfill on its property for the company's exclusive use pursuant to the statutes and regulations of the State of Montana for the disposal of Class 2 and Class 3 wastes.
2. Centennial Minerals will sell recyclable material, waste oil, and used lubricants to local recycling firms whenever feasible.
3. Centennial Minerals will negotiate a standby agreement with the Solid Waste District to use their services in the event waste disposal is not practical at the mine site. The company will reimburse the district for any services the district may provide to the company.
4. Centennial Minerals will monitor the residential locations of the mine and construction workforces and periodically contact the Solid Waste District to insure that the project is not causing either a waste collection or disposal problem.
5. Centennial Minerals agrees to make a payment of \$570.00 for miscellaneous solid waste management expenses through the impact assistance contingency fund by application from the District at any time during the impact period. The District may request additional payments from the fund as necessary and/or seek amendments to the Plan as provided in 90-6-301 et seq. MCA.

AMENDMENT 6: WATER SUPPLY AND WASTEWATER TREATMENT

EXPLANATION:

There were no major amendments to the content of the Impact Plan as submitted July 8, 1985. Additional language was added to extend eligibility for assistance from the Impact Assistance Contingency Fund to the Boulder sewer and water systems by agreement between Centennial Minerals and the Town of Boulder. Boulder has the only water and sewer

systems that qualify for impact assistance under the Hard Rock Mine Impact Mitigation Act.

The content of the section entitled Centennial Minerals' Proposed Plan of Action on page 157 shall be stricken in its entirety and replaced by the language below.

CONTENT:

Water Supply and Wastewater Treatment

Centennial Minerals will monitor employee residence locations and periodically contact the Town of Boulder to assess whether the community is experiencing any water supply or wastewater treatment problems as a result of mine development. Should difficulties subsequently occur that have been caused or magnified by the Montana Tunnels Project, the Town may apply for additional impact assistance from the Impact Assistance Contingency Fund administered by the Jefferson County Commission. If financial resources available through the fund are insufficient to address problems caused by the Montana Tunnels Project, Centennial Minerals will amend the Plan or take other action to correct the problem(s) in concert with the Town of Boulder.

AMENDMENT 7: MEDICAL SERVICES

EXPLANATION:

There were no major revisions to the content of the Impact Plan as submitted July 8, 1985. Eligibility for assistance through the Impact Assistance Contingency Fund was extended to the Boulder Ambulance and Clancy Quick Response Unit. Centennial Minerals also clarified its commitment to the joint training of emergency response personnel. The amendments were agreed to by Centennial Minerals, the Town of Boulder, and representatives of the Clancy Quick Response Unit.

The numbered paragraphs 1 through 5 on page 172 and 1 through 4 on page 173 shall be stricken in their entirety and replaced by the language below.

CONTENT:

Emergency Medical Services -- Town of Boulder

1. Centennial Minerals and the Town of Boulder propose to negotiate a mutual aid agreement to supply back-up ambulance and EMT support for the Montana Tunnels Project. The agreement may include the participation of the Clancy Quick Response Unit. The substantive details of the agreement will be negotiated in the future, at the onset of the impact period. The company suggests that the agreement include but not necessarily be limited to the following provisions:
 - a. The Boulder Ambulance will be available to respond to emergency calls at the mine/mill site at the company's request. The company will reimburse the Boulder Ambulance for the cost of service.
 - b. Centennial Minerals' ambulance will be available to support the Boulder Ambulance, if needed, for major accidents or cases requiring several vehicles for transport that occur in the Corbin, Wickes, Jefferson City, and Boulder areas. The company will have only one emergency vehicle and prefers not to send it too far from base in case it is needed at the mine.
 - c. Centennial Minerals' EMT staff will be available to assist the Boulder Ambulance in a support capacity for major accidents, etc., occurring within 15 or so miles of the mine. Again, the company must have trained EMT's onsite at all times when the plant is running.
 - d. The Boulder Ambulance will take the lead in organizing and providing training for emergency medical services. The company's EMT staff will jointly train with the Boulder volunteer group.
 - e. Centennial Minerals will provide the Boulder Ambulance with a list of equipment available at the mine that can be "loaned out" for use in medical emergencies such as winches, hydraulic jacks, etc. At this time, the company does not anticipate owning heavy duty extraction equipment (i.e., Jaws-of-Life) but, whatever similar equipment is available will be shared with the surrounding community as needed.
2. Within 30 days of the start of construction at the Montana Tunnels Project site, or subsequently at the Town's request, Centennial Minerals will provide a one-time \$5,000 grant for the purchase of emergency service equipment. The community is considering the purchase of a new ambulance within the next few years. The funds can be applied to that purchase or for other types of equipment at the Town's discretion.
3. Centennial Minerals will make a donation of \$1,000 annually to the Town of Boulder to assist with the operating expense of the Boulder

Ambulance for the life of the mutual aid agreement or as otherwise negotiated by both parties after the impact period.

4. As a matter of company policy, members of the Boulder Volunteer Ambulance and the fire department will be invited to participate in all emergency response training conducted by Centennial Minerals.

Emergency Medical Services -- Clancy Quick Response Unit

1. Centennial Minerals and the Clancy Quick Response Unit propose to negotiate a mutual aid agreement to supply back-up emergency medical support for the Montana Tunnels Project. The agreement may include the participation of the Boulder Volunteer Ambulance. The substantive details of the agreement will be negotiated in the future at the onset of the impact period. The company suggests that the agreement include but not necessarily be limited to the following provisions:
 - a. The Clancy Quick Response Unit will be available to respond to emergency calls at the mine/mill site at the company's request. The company will reimburse the Quick Response Unit for the cost of service.
 - b. Centennial Minerals' ambulance will be available to support the activities of the Clancy Quick Response Unit, if needed, for major accidents or cases requiring several vehicles for transport that occur in the Corbin, Wickes, Jefferson City, and Boulder areas. The company will have only one emergency vehicle and prefers not to send it too far from base in case it is needed at the mine.
 - c. Centennial Minerals' EMT staff will be available to assist the Clancy Quick Response Unit in a support capacity for major accidents, etc., occurring within 15 or so miles of the mine. Again, the company must have trained EMT's onsite at all times when the plant is running.
 - d. Centennial Minerals will provide the Clancy Quick Response Unit with a list of equipment available at the mine that can be "loaned out" for use in medical emergencies such as winches, hydraulic jacks, etc. At this time, the company does not anticipate owning heavy duty extraction equipment (i.e., Jaws-of-Life) but, whatever similar equipment is available will be shared with the surrounding community as needed.
2. Within 30 days of the start of construction at the Montana Tunnels Project site, or subsequently at the Quick Response Unit's request, Centennial Minerals will make a one-time donation in the amount of \$2,500 for the purchase of emergency service equipment.

3. Centennial Minerals will make a donation of \$250 annually to the Clancy Quick Response Unit to help cover its operating costs for the life of the mutual aid agreement or as otherwise negotiated by both parties following the impact period.
4. As a matter of company policy, members of the Clancy Quick Response Unit will be invited to participate in all emergency response training conducted by Centennial Minerals.
5. The Clancy Quick Response Unit is eligible to receive additional impact assistance, if necessary, through the Impact Assistance Contingency Fund administered by the Jefferson County Commission.

AMENDMENT 8: FIRE PROTECTION

EXPLANATION:

Centennial Minerals made commitments for impact assistance to the Jefferson City Volunteer Fire Department, Clancy Volunteer Fire Department, Montana City Rural Fire District, Boulder Valley Rural Fire District, and Town of Boulder Volunteer Fire Department. Negotiations with the various fire departments led to two amendments to the company's commitments of July 8, 1985. The amendments include a pledge to reimburse the fire departments for costs incurred in responding to fires at the Montana Tunnels Project Site and to form a fire services advisory committee including representatives from each of the affected fire departments. Centennial Minerals is unilaterally extending its fire protection commitments to Jefferson County. The county recently assumed responsibility for fire suppression in rural areas of the county not served by another organized fire department.

The content of the section entitled Centennial Minerals' Proposed Plan of Action extending from page 182 through 184 shall be stricken in its entirety and replaced by the language below.

CONTENT:

Fire Protection Services -- Jefferson City Volunteer Fire Department

1. Centennial Minerals and the Jefferson City Volunteer Fire Department propose to negotiate a mutual aid agreement whereby the Department will supply backup support to the company for fire suppression on the Montana Tunnels property. Centennial Minerals suggests that the agreement include but not necessarily be limited to the following provisions:
 - a. The Jefferson City Fire Department will respond to fire calls made by Centennial Minerals at the mine site.
 - b. Centennial Minerals' fire suppression unit and the Jefferson City Department will engage in joint training classes and exercises.
 - c. Centennial Minerals will supervise the combined force of both departments on structure and equipment fires within the mine/mill complex.
 - d. The Jefferson City Volunteer Fire Department will be linked with the mine site by radio communication through its dispatch function or officers.
2. To assist the Department maintain and operate its fire equipment, Centennial Minerals will make an annual contribution of \$1,000 to the Department for the life of the mutual aid agreement or as otherwise negotiated by both parties after the impact period.
3. Centennial Minerals will make a \$15,000 one-time donation to the Department toward the purchase or construction of a new fire hall/garage for storage of the Department's fire fighting equipment. Payment will be made within 30 days of the start of construction at the Montana Tunnels Project site, or subsequently at the Department's request.
4. Centennial Minerals will periodically supply the Jefferson City Volunteer Fire Department and other adjacent Jefferson County fire departments with a list of equipment that the company will loan or otherwise make available to assist in the suppression of structure or wildland fires. Once listed by the company as part of a "fire protection equipment pool," the company's equipment will be available at the verbal request of the Jefferson City Fire Chief or his designated representative.
5. The Jefferson City Volunteer Fire Department is eligible for additional impact assistance, if need be, through the Impact Assistance Contingency Fund administered by the Jefferson County Commission.

6. Centennial Minerals agrees to reimburse the fire department for reasonable costs incurred by the department responding to fire calls at the Montana Tunnels property.
7. Centennial Minerals will establish a fire protection advisory committee consisting of one representative from each of the five fire departments included in the plan to advise the company on fire protection activities in Jefferson County, including equipment needs for the proposed "fire protection equipment pool" as identified in the plan.

Fire Protection Services: Clancy Volunteer Fire Department
Montana City Rural Fire District
Boulder Valley Rural Fire District
Town of Boulder Volunteer Fire Dept.
Jefferson County Rural Fire Department

1. Centennial Minerals will periodically supply the departments with a list of equipment that the company will loan or otherwise make available to assist in the suppression of structure or wildland fires. Once listed by the company as part of a "fire protection equipment pool," the company's equipment will be available at the verbal request of the department's fire chief or designated representatives.
2. Within 30 days of the start of construction at the Montana Tunnels Project site, or subsequently at the Fire District's request, Centennial Minerals will make a \$250.00 one-time donation to each department to offset any unexpected, miscellaneous fire protection costs.
3. As a matter of company policy, members of all departments will be invited to participate in all emergency response training conducted by Centennial Minerals.
4. All departments are eligible for additional impact assistance, if need be, through the Impact Assistance Contingency Fund administered by the Jefferson County Commission.
5. Centennial Minerals agrees to reimburse all departments for reasonable costs incurred by the department responding to fire calls at the Montana Tunnels property.
6. Centennial Minerals will establish a fire protection advisory committee consisting of one representative from each of the five fire departments included in the plan to advise the company on fire protection activities in Jefferson County, including equipment needs for the proposed "fire protection equipment pool" as identified in the plan.

AMENDMENT 9: EDUCATION

EXPLANATION:

Centennial Minerals and the four affected school districts of central and northern Jefferson County have negotiated a series of substantive changes to the Impact Plan as submitted July 8, 1985. The amended language replaces Centennial Minerals' commitment in the original document as follows:

The content of the section entitled Centennial Minerals Proposed Plan of Action contained on pages 212 and 213 shall be stricken in its entirety and replaced by the language below.

CONTENT:

1. The contents of this section shall apply to each of the following jurisdictions:
 - a. Jefferson High School District #1
 - b. Clancy Elementary School District #1
 - c. Boulder Elementary School District #7
 - d. Montana City Elementary School District #27
2. For the duration of the impact period, Centennial Minerals will pay each school district an amount equal to the sum of the foundation and permissive payments per ANB based upon the school foundation schedules in effect at the time of student registration for each student space occupied by an in-migrant mine employee student. For children enrolled in school after the school year has started, such payments will be prorated for the remainder of the school year. In calculating Centennial Minerals' payment obligation during the second and subsequent school years, the company shall reimburse the school districts for the net addition in student spaces occupied by in-migrant mine employee students over the preceding year. The school district will notify and request payment for the in-migrant mine employee enrollees in writing to Centennial Minerals. The company will provide payment within 30 days of notification.
3. For the duration of the impact period, should any school district enroll an in-migrant mine employee student who is handicapped and/or developmentally disabled and who requires a special educational curriculum, Centennial Minerals will pay the district for the cost of the child's education, less payments made to the district for such purposes from state and federal agencies. The school district shall notify and request payment for such enrollees in writing to Centennial Minerals. The request for

payment shall be accompanied by documentation attesting to the child's disability and a copy of the educational treatment plan. Centennial Minerals will provide payment within 30 days of notification.

4. It is Centennial Minerals' company policy to be actively involved in and support community activities. Montana Tunnels will support charitable activities and community affairs in the local area. Periodically, the community and schools will receive special donations of equipment, materials, and supplies from the company. In the past, the company has donated manpower and equipment for special projects conducted either by the schools, non-sectarian/non-partisan civic groups, and units of local government. That policy will be in effect at Montana Tunnels as well. The project manager will oversee the company's participation in and support of community affairs.
5. During the impact period, if the addition of one or more in-migrant mine employee student(s) to a classroom increases the classroom enrollment so that the school board decides to split the class, Centennial Minerals will pay its prorated share of hiring an instructional aide or a new teacher for the new class. Proration will be based on the number of in-migrant mine employee students enrolled in the affected grade compared with the total number of students in that grade.
6. During the impact period, Centennial Minerals agrees to bear its prorated share of any construction costs for new school structures within the Montana City, Boulder, and Clancy elementary school districts. The prorated share is the proportion of in-migrant mine employee students to total school enrollment during the then current, or most recently completed school year. The monitoring committee as constituted in the plan may make recommendations to Centennial Minerals concerning the prorated share of such costs.

As used in this section, "school structures" means classrooms, libraries, laboratories, teacher work areas, administrative offices, and related support facilities. Excluded are gymnasiums, athletic fields, and movable equipment.

For the district(s) ultimately not sharing in the project-generated tax revenues, Centennial Minerals may make payments for school facilities either in the form of a grant to the school district or by using educational impact bonds as outlined in 90-6-310 MCA.

7. During the impact period, if, in the judgement of a school board, school overcrowding is projected to occur prior to the time new school structures can be constructed, Centennial Minerals agrees to pay a prorated share of the cost of any temporary facilities. The company's prorated share is the proportion of in-migrant mine employee students to total school enrollment in the affected grades using the temporary facilities.

8. Tax credits to offset tax prepayments will be levied only against tax revenues derived from the taxable value of the Montana Tunnels' property. When such tax credits are available, the total amount will be limited annually to a maximum of \$10,000 or 15 percent of the tax prepayment, whichever is greater, until all prepayments are recovered. Tax credits will be available to Centennial Minerals commencing with the second fiscal year of commercial mining operations.
9. The monitoring committee is an appropriate body to discuss mine-related, educational items of mutual interest to the school districts. Subject matter may include but is not necessarily limited to the provision of tax base sharing among the school districts.
10. This plan or any portion thereof which applies to a single school district may be modified at any time by and with the mutual consent of Centennial Minerals and the affected school district. However, changes which impact other school districts may only be made with the concurrence of all affected districts and the Jefferson County Commissioners.

AMENDMENT 10: SECONDARY POPULATION CHANGE

EXPLANATION:

An amendment pertaining to the potential for secondary population increase and its impact upon Jefferson County was agreed to by Centennial Minerals and Jefferson County. The amendment was adopted in response to a critique of the Impact Plan prepared by staff of the Montana Hard Rock Impact Board.

The following passage shall be stricken in its entirety from pages 47 and 48 of the plan:

Centennial Minerals is responsible for financing the cost of service expansions and/or increases in net operating expenses for the population that it has directly provided employment. That is, for its employees, those of its contractors, and their families. Centennial Minerals is not responsible for service delivery expenses cause by other concurrent or subsequent events be it new industry, subdivision development, or an increase in the birth rate, etc.

The passages below shall be included in the plan.

CONTENT:

Secondary population increase refers to the net in-migration of individuals who are not employed by Centennial Minerals, its contractors, or members of such employee's household.

Centennial Minerals projects that there will be little to no secondary population increase resulting from the development of the Montana Tunnels Project. Jefferson County acknowledges that it has considered the potential for secondary population increase caused by the Montana Tunnels Project and concurs with the company's assessment.

Should an affected jurisdiction experience secondary population increase during the impact period, the company shall be obligated to provide impact assistance for secondary population increase when there is clear, incontrovertible, documented proof that such individuals have immigrated to the jurisdiction and have increased the net operating costs of providing governmental services as a result of the Montana Tunnels Project. In the event "secondary population increase" may be attributed to several conditions or sources, Centennial Minerals shall bear a share of additional cost proportionate to the company's role in causing the secondary population increase. The use of secondary population or employment multipliers is expressly prohibited as a method by which the secondary population increase may be computed.

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Carl Anderson. Fire Chief, Montana City Fire Department. September 27, 1984. Montana City.

Lee Bohn. Cashier, Bank of Montana. October 31, 1984. Helena.

Vern Cougill. Broker-President, Cougill-Gallagher, Inc. October 31, 1984. Helena.

Drew Dawson. Chief, Boulder Volunteer Ambulance Service. August 10 & 14, 1984. Boulder.

Tom Dawson. Sheriff, Jefferson County. August 14, 1984. Boulder.

Jim DeTienne. Supervisor. St. Peter's Ambulance Service. April 24, 1985. Helena.

Fred Flanders. Vice President, Norwest Bank of Helena. October 31, 1984. Helena.

James Harper. Boulder Public Works. August 3 & November 1, 1984. Boulder.

John Heide. Fire Chief, Boulder Valley Fire Department. September 19, 1984. Boulder.

Earl Hustis. Insurance Services Office. October 30, 1984. Great Falls.

Don King. Superintendent, Clancy School District #1. August 1 & September 28, 1984. Helena.

Jeannie Knight. Sanitarian, Jefferson County. October 19, 1984. Boulder.

Penny Koke. Superintendent, Montana City School District #27. August 14, September 28, 1984, & January 23, 1985. Helena.

Ron Lindgren. Senior Vice President, American Federal Savings. October 31, 1984. Helena.

Tim McCauley. Jail Planner. March 8 & November 19, 1984. Helena.

June McClain. Assistant Vice President, Security Bank. October 31, 1984. Helena.

Jack Reilly. Fire Chief, Jefferson City. September 19, 1984. Jefferson City.

Mel Sharp. Plant Manager, ASARCO, Inc. November 3, 1984. East Helena.

James Strieb. Fire Chief, Boulder Fire Department. August 3 & 17,
1984. Boulder.

Dan Yazak. Administrator, Shodair Children's Hospital. August 13,
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APPENDIX A

LOCAL GOVERNMENT FINANCE

The Local Government Budgeting Process
Fixed, Variable, and Semi-variable Costs
Property Taxation

APPENDIX A

The Local Government Budgeting Process

Local governments have available a wide array of mechanisms to finance governmental services. Revenue is generated by service of license fees, fines and forfeitures, intergovernmental transfers (e.g., payments-in-lieu of taxes, revenue sharing, grants), interest income, and various forms of taxes. When establishing an operating budget, the governing body of a unit of government sets its planned level of expenditures. Next, non-tax revenue is applied to the budget. If it is sufficient to cover proposed costs, the budget is balanced and may be formally enacted. If additional funds are needed to cover proposed expenditures, two options are available. First, the governing body can reduce planned expenditures to a level commensurate with available non-tax revenue. If spending reduction is not desirable, taxes can be levied to make up the deficit between planned expenditures and available non-tax revenue within constraints established by statutory tax or expenditure limitations.

Setting expenditure levels is typically a "backward looking" process. That is, to establish next year's funding level, past and current expenditures are reviewed and adjusted to reflect anticipated changes in costs. This is usually done by adding an inflationary increment to each of the expenditure categories in the budget. For example, five percent might be added to an agency's personal services costs to cover proposed staff salary increases and ten percent might be added to a utility budget to meet the cost of a rate increase granted to the

supplier of natural gas. A salient feature of this type of budget building process is that future expenditure levels are only indirectly related to future workload or service demands while being directly and strongly tied to past allocations of financial resources. In this system, last year's spending level serves as a sort of "minimum bid" or floor for the budget. Occasionally, proposed expenditure levels are set on the basis of expected changes in the demand for services. For example, a newly enacted state statute or court decision could mandate staffing and procedural standards for county jails which, in turn, might require a sheriff's department to add personnel and increase its operating budget. Theoretically, the reverse also is true with expected reductions in workload leading to reduced budgets. Practically speaking that is rarely the case. Barring circumstances bordering on financial cataclysm, actual expenditure reductions in government budgets are difficult to enact.

Fixed, Variable, and Semi-variable Costs

All budgets include three types of costs.

- Fixed Costs are expenses that are generally insensitive to agency workload. The price is the same regardless of the workload or units of service provided. Debt service, facility operation and administrative services are generally considered fixed costs. For example, if a county were to spend \$1.0 million dollars to build a jail to hold 20 inmates and the debt service was \$100,000 per year, the debt service payment is fixed regardless of whether the jail holds one or 20 inmates.
- Semi-Variable Costs are expenses that are moderately sensitive to changes in workload and tend to shift in major increments corresponding to major changes in service demand. Most personnel costs and purchased services such as insurance or repairs tend to be semi-variable costs. To use the jail

example again, assume a jail has two cell blocks each designed to hold 10 inmates and be supervised by one jailer. One jailer can supervise from zero to ten inmates without an increase in costs. Adding the eleventh inmate carries the service demand over a threshold that requires an additional jailer and a corresponding increase in costs. As a general rule, unless a service is being operated at capacity, the addition of small increments of work or service demand does not require an increase in semi-variable costs.

- Variable Costs are expenses that are sensitive to workload or service demand and vary in direct relation to changes in the level of services provided. For example, the amount of money spent feeding prisoners in a jail increases or decreases with the jail population. Supplies, postage and mailing expenses, and clothing are typical examples of variable costs.

Usually, semi-variable costs make up the largest single category of budgeted expenses in governmental agencies. Accordingly, such budgets are only moderately sensitive to population changes and any resulting service demands a community might experience. Small changes in service demands or those effected in a slow, incremental manner generally do not require major adjustments to governmental budgets unless the agency is operating near capacity.

Property Taxation

In Montana, the property tax is the major source of tax revenue available to local governments. The property tax is also a revenue source of "last resort." That is, in the budget process, funds generated through property taxation are the final revenue element used to cover the cost of proposed services and balance the budget.

The property tax system is administered by the Montana Department of Revenue. Under Montana law, there are twelve classes of property, each

with a taxable percentage, which when applied to the market value of the property establishes its taxable value. For tax assessment purposes, the market value of residential property is general 50 percent of what property would actually sell for in the market. The taxable value is then multiplied by the mill levy to determine the tax due. For example, assume a residence has a true market value of \$50,000. Its tax assessment market value would be \$25,000. Residential property is classified in class four with a taxable percentage of 8.55 percent. The assessment market value of \$25,000 multiplied by the taxable percentage of 8.55 percent yields a taxable value of \$2,138. If the taxing jurisdiction levies 300 mills, the annual tax payment would be \$641.00.¹

¹In Montana, property is not taxed at its full market value as provided in the code, but at some percentage thereof depending on the class of property and appraisal date.

APPENDIX B

SCHOOL DISTRICT ENROLLMENT PROJECTIONS

Montana City Elementary District #27
Clancy Elementary District #1
Boulder Elementary District #7
Jefferson (Boulder) High School District #1

MONTANA CITY ELEMENTARY SCHOOL DISTRICT #27
PROJECTED BASELINE SCHOOL ENROLLMENT, 1985-1990
(Composite Projection)

	Actual 1984-85	Projected Enrollment: Baseline Low Scenario ¹				
		1985-86	1986-87	1987-88	1988-89	1989-90
Kindergarten	23	18	17	12	15	17
First grade	13	26	20	19	14	16
Second grade	17	15	29	23	22	16
Third grade	13	19	17	33	26	24
Fourth grade	12	13	19	17	33	26
Fifth grade	11	13	14	21	19	35
Sixth grade	16	13	15	16	23	20
Subtotal	105	117	131	141	152	154
Seventh grade	17	18	14	17	18	26
Eighth grade	17	16	17	13	16	17
Subtotal	34	34	31	30	34	43
GRAND TOTAL	139	151	162	171	186	197
		Projected Enrollment: Baseline High Scenario ¹				
		1985-86	1986-87	1987-88	1988-89	1989-90
Kindergarten	23	20	21	14	17	19
First grade	13	27	24	24	17	21
Second grade	17	15	30	26	26	19
Third grade	13	19	17	33	29	29
Fourth grade	12	13	18	17	32	28
Fifth grade	11	14	14	21	19	36
Sixth grade	16	14	17	17	24	22
Subtotal	105	122	141	152	164	174
Seventh grade	17	17	15	18	18	25
Eighth grade	17	16	16	14	17	17
Subtotal	34	33	31	32	35	42
GRAND TOTAL	139	155	172	184	199	216

¹ Average of two projection methods.

Source: Mountain International, Inc.

MONTANA CITY ELEMENTARY SCHOOL DISTRICT #27
 PROJECTED BASELINE SCHOOL ENROLLMENT, 1985-1990
 (First Projection Method -- Retention Rates)

	Actual 1984-85	Projected Enrollment: Baseline Low Scenario ¹				
		1985-86	1986-87	1987-88	1988-89	1989-90
Kindergarten	23	18	17	12	15	17
First grade	13	27	21	20	14	17
Second grade	17	15	32	25	24	16
Third grade	13	20	18	38	30	27
Fourth grade	12	13	20	18	38	30
Fifth grade	11	13	14	22	20	42
Sixth grade	16	12	15	16	25	22
Subtotal	105	118	137	151	166	171
Seventh grade	17	18	14	17	18	28
Eighth grade	17	16	17	13	16	17
Subtotal	34	34	31	30	34	45
GRAND TOTAL	139	152	168	181	200	216

		Projected Enrollment: Baseline High Scenario ²				
		1985-86	1986-87	1987-88	1988-89	1989-90
Kindergarten	23	20	20	14	17	19
First grade	13	29	25	25	18	22
Second grade	17	15	33	28	28	20
Third grade	13	19	17	38	32	32
Fourth grade	12	12	18	17	36	31
Fifth grade	11	14	14	21	20	43
Sixth grade	16	13	17	17	25	24
Subtotal	105	122	144	160	176	191
Seventh grade	17	17	14	18	18	27
Eighth grade	17	16	16	13	17	17
Subtotal	34	33	30	31	35	44
GRAND TOTAL	139	155	174	191	211	235

¹ Average of last five years retention rates; kindergarten projected as five-year average of enrollment to total resident births in Jefferson County. Coefficient = 0.132.

² Average of last three years retention rates; kindergarten projected as three-year average of enrollment to rural resident births in Jefferson County. Coefficient = 0.219.

Source: Mountain International, Inc.

MONTANA CITY ELEMENTARY SCHOOL DISTRICT #27
 PROJECTED BASELINE SCHOOL ENROLLMENT, 1985-1990
 (Second Projection Method -- Student Numbers)

	Projected Enrollment: Baseline Low Scenario ¹					
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Kindergarten	23	18	17	12	15	17
First grade	13	24	19	18	13	15
Second grade	17	14	26	21	20	15
Third grade	13	18	16	27	22	21
Fourth grade	12	13	18	16	27	22
Fifth grade	11	13	14	19	17	28
Sixth grade	16	14	15	16	21	18
Subtotal	105	114	125	129	135	136
Seventh grade	17	18	13	16	17	23
Eighth grade	17	16	17	13	16	17
Subtotal	34	34	30	29	33	40
GRAND TOTAL	139	148	155	158	168	176

	Projected Enrollment: Baseline High Scenario ²					
Kindergarten	23	20	20	14	17	
First grade	13	25	22	22	16	
Second grade	17	14	27	24	24	
Third grade	13	18	16	28	25	
Fourth grade	12	13	18	16	28	
Fifth grade	11	14	14	20	17	
Sixth grade	16	14	16	17	22	
Subtotal	105	118	133	141	149	
Seventh grade	17	17	15	17	18	
Eighth grade	17	16	16	14	16	
Subtotal	34	33	31	31	34	
GRAND TOTAL	139	151	164	172	183	193

¹ Average of last five years number of new students per class; kindergarten projected as five-year average of enrollment to total resident births in Jefferson County. Coefficient = 0.132.

² Average of last three years number of new students per class; kindergarten projected as three-year average of enrollment to rural resident births in Jefferson County. Coefficient = 0.219.

Source: Mountain International, Inc.

CLANCY ELEMENTARY SCHOOL DISTRICT #1
PROJECTED BASELINE SCHOOL ENROLLMENT, 1985-1990
(Composite Projection)

	Actual 1984-85	Projected Enrollment: Baseline Low Scenario ¹				
		1985-86	1986-87	1987-88	1988-89	1989-90
Kindergarten	38	37	36	25	32	34
First grade	37	45	43	42	30	38
Second grade	35	38	45	44	43	31
Third grade	30	37	40	48	46	45
Fourth grade	30	30	37	40	48	46
Fifth grade	32	31	31	38	41	48
Sixth grade	41	33	32	32	39	43
Subtotal	243	251	264	269	279	285
Seventh grade	30	41	33	32	32	39
Eighth grade	40	33	44	36	35	35
Subtotal	70	74	77	68	67	74
GRAND TOTAL	313	325	341	337	346	359
Projected Enrollment: Baseline High Scenario ¹						
Kindergarten	38	45	45	31	39	40
First grade	37	44	52	52	37	46
Second grade	35	40	47	56	56	39
Third grade	30	34	39	46	54	54
Fourth grade	30	29	33	37	44	53
Fifth grade	32	32	31	35	39	47
Sixth grade	41	33	33	32	36	41
Subtotal	243	257	280	289	305	320
Seventh grade	30	40	33	33	31	35
Eighth grade	40	33	43	35	35	33
Subtotal	70	73	76	68	66	69
GRAND TOTAL	313	330	356	357	371	389

¹ Average of two projections by retention rate and student number.

Source: Mountain International, Inc.

CLANCY ELEMENTARY SCHOOL DISTRICT #1
 PROJECTED BASELINE SCHOOL ENROLLMENT, 1985-1990
 (First Projection Method -- Retention Rates)

	Actual 1984-85	Projected Enrollment: Baseline Low Scenario ¹				
		1985-86	1986-87	1987-88	1988-89	1989-90
Kindergarten	38	37	36	25	32	34
First grade	37	46	44	43	30	38
Second grade	35	38	47	45	44	31
Third grade	30	37	41	50	48	47
Fourth grade	30	30	37	41	50	48
Fifth grade	32	31	31	38	42	51
Sixth grade	41	33	32	32	39	44
Subtotal	243	252	268	274	285	293
Seventh grade	30	41	33	32	32	39
Eighth grade	40	32	44	36	35	35
Subtotal	70	73	77	68	67	74
GRAND TOTAL	313	325	345	342	352	367

		Projected Enrollment: Baseline High Scenario ²				
		1985-86	1986-87	1987-88	1988-89	1989-90
Kindergarten	38	45	45	31	39	40
First grade	37	45	54	54	37	47
Second grade	35	40	49	59	59	40
Third grade	30	34	39	47	57	57
Fourth grade	30	29	33	37	45	55
Fifth grade	32	32	31	35	39	48
Sixth grade	41	33	33	32	36	41
Subtotal	243	258	284	295	312	328
Seventh grade	30	40	32	32	31	35
Eighth grade	40	32	43	35	35	33
Subtotal	70	72	75	67	66	68
GRAND TOTAL	313	330	359	362	378	396

- ¹ Average of last five years retention rates; kindergarten projected as five-year average of enrollment to total resident births in Jefferson County. Coefficient = 0.273.
² Average of last three years retention rates; kindergarten projected as three-year average of enrollment to rural resident births in Jefferson County. Coefficient = 0.484.

Source: Mountain International, Inc.

CLANCY ELEMENTARY SCHOOL DISTRICT #1
 PROJECTED BASELINE SCHOOL ENROLLMENT, 1985-1990
 (Second Projection Method -- Student Numbers)

	Projected Enrollment: Baseline Low Scenario ¹				
	1985-86	1986-87	1987-88	1988-89	1989-90
Actual 1984-85	38				
Kindergarten	37	36	25	32	34
First grade	37	42	41	30	37
Second grade	35	43	42	41	30
Third grade	30	39	45	44	43
Fourth grade	30	37	39	45	44
Fifth grade	32	30	37	40	45
Sixth grade	41	31	31	38	41
Subtotal	243	258	260	270	274
Seventh grade	30	33	31	31	38
Eighth grade	40	44	36	34	34
Subtotal	70	77	67	65	72
GRAND TOTAL	313	335	327	335	346

Projected Enrollment: Baseline High Scenario²

Kindergarten	45	45	31	39	40
First grade	43	50	50	36	44
Second grade	40	45	52	52	38
Third grade	34	39	44	51	51
Fourth grade	29	32	37	43	50
Fifth grade	32	31	34	39	45
Sixth grade	33	33	32	36	41
Subtotal	256	275	280	296	309
Seventh grade	40	33	33	31	35
Eighth grade	33	43	35	35	34
Subtotal	73	76	68	66	69
GRAND TOTAL	329	351	347	362	378

¹ Average of last five years number of new students by class; kindergarten projected as five-year average of enrollment to total resident births in Jefferson County. Coefficient = 0.273.

² Average of last three years number of new students by class; kindergarten projected as three-year average of enrollment to rural resident births in Jefferson County. Coefficient = 0.484.

Source: Mountain International, Inc.

BOULDER ELEMENTARY SCHOOL DISTRICT #7
PROJECTED BASELINE SCHOOL ENROLLMENT, 1985-1990
(First Projection Method -- Retention Rates)

	Projected Enrollment: Baseline Low Scenario ¹				
	1985-86	1986-87	1987-88	1988-89	1989-90
Kindergarten	26	37	36	25	31
First grade	25	24	35	34	30
Second grade	33	25	24	35	24
Third grade	24	31	24	23	32
Fourth grade	21	25	32	25	34
Fifth grade	24	21	25	32	24
Sixth grade	25	25	21	26	26
Subtotal	178	197	200	205	201
Seventh grade	27	22	18	22	29
Eighth grade	26	22	17	14	17
Subtotal	53	44	39	35	46
GRAND TOTAL	231	232	236	235	247

	Projected Enrollment: Baseline High Scenario ²				
	1985-86	1986-87	1987-88	1988-89	1989-90
Kindergarten	26	37	36	25	31
First grade	25	25	35	34	30
Second grade	33	25	25	35	24
Third grade	24	36	27	27	37
Fourth grade	21	24	36	27	38
Fifth grade	24	21	24	37	27
Sixth grade	25	24	21	24	28
Subtotal	178	192	204	209	215
Seventh grade	27	24	23	20	36
Eighth grade	26	25	22	21	21
Subtotal	53	49	45	41	57
GRAND TOTAL	231	241	249	250	272

¹ Average of last three years retention rates; kindergarten projected as three-year average of enrollment to total resident births in Jefferson County. Coefficient = 0.276.

² Average of last five years retention rates; kindergarten projected as five-year average of enrollment to rural resident births in Jefferson County. Coefficient = 0.276.

Source: Mountain International, Inc.

JEFFERSON (BOULDER) HIGH SCHOOL DISTRICT #1
 PROJECTED BASELINE SCHOOL ENROLLMENT, 1985-1990
 (First Projection Method -- Retention Rates)

	<u>Projected Enrollment</u>				
Actual 1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Ninth grade	60	51	58	50	46
Tenth grade	46	56	48	54	47
Eleventh grade	51	54	54	46	52
Twelfth grade	53	40	49	49	42
TOTAL	210	201	209	199	187

¹Nineth grade projected from sum of Clancy and Boulder eight grades; Montana City students assumed to attend high school in Helena. Projections based on last three retention rates.

Source: Mountain International, Inc.

